(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁷: **G06F 17/30**

(21) International Application Number: PCT/US01/04430

(22) International Filing Date: 9 February 2001 (09.02.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/181,238   9 February 2000 (09.02.2000)   US

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(81) **Designated States** *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) **Designated States** *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

[Continued on next page]

(54) Title: COMPREHENSIVE WEB SITE MANAGEMENT SYSTEM AND PROCESSES THEREFORE
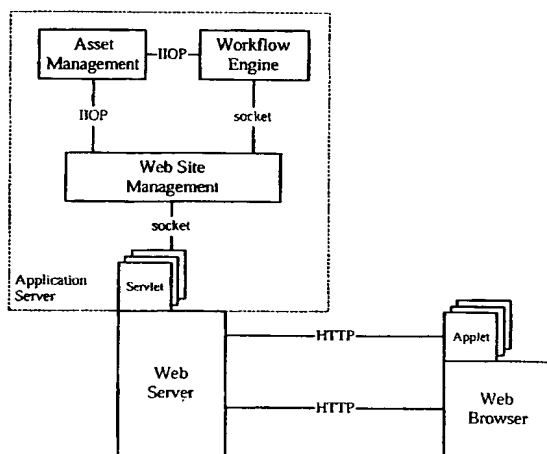
(57) **Abstract:** A comprehensive web site creation and management system. The system provides architecture, administration, content management, and workflow functionality for collaborative web site management. The system allows collaboration and workflow throughout an entire organization rather than controlled by a web master. Different user types can use the system, such as technical web masters, artists, graphical designers, authors and other users. Various web creation tools, maintenance tools, servers and other tools can be used with this system rather than a single proprietary tool.
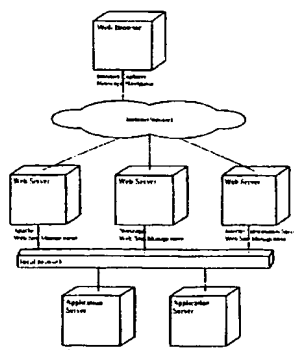
WO 01/59626 A1

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

COMPREHENSIVE WEB SITE MANAGEMENT SYSTEM
AND PROCESSES THEREFORE

Field of the Invention: This invention relates to the field of the development and management of Web sites.

Background of the Invention

The Internet has exploded in popularity and the number of web sites is increasing at a dramatic rate. All areas of business are turning to the web as a means of information transfer and electronic commerce. There are reports, in 1999, that electronic publishing is a $1 billion market that is expected to grow 50% annually. E-commerce, in 1999, is expected to become a $300 billion market and web advertising is expected to reach $7.5 billion by 2002.

Other key aspects concerning the Internet expansion, as of 1999, include the number of devices on the Internet doubling every 6 months. Also, there were 350 million unique web pages in 1997, and this number is expected to expand to 7.7 billion by 2002. This is an 86% compound rate. Additionally, Internet usage is expected to grow between 60% and 100% per year. Six million businesses had a web site (21%) in 1997, and this number is expected to at least double by 2000.

The web development applications market size was over $400 million in 1997, and estimated to be over $2.7 billion in 1999. This includes tools such as the proposed web site creation and management system. The future of this market should continue to grow with the Internet.

The key problems with existing solutions are complexity, incomplete solutions, and non-collaborative environments. Many applications are complex to .use and force the final page authoring work to be completed by a technical web master. The personnel responsible for a portion of the web site (i.e. a product team) needs more control in terms of timeliness, page design, content creation, and reuse. In order for this to happen, the web site creation and management application must be powerful enough to perform all web creation and deployment functions, but still be secure, intuitive, and simple to use.

Many applications are focused on creation of web pages or the web site, but do not present the complete solution to the web site management issues (or

vice versa). Such systems include Eprise Participant Server, Broad Vision, Cold Fusion, Vignette and NCompass Resolution

Presently available products for web site management have no system and bearing with the web master bottleneck. This is probably acceptable for smaller sites that are updated infrequently, or with minor changes.

Another alternative is a homegrown solution. Most automated systems today consist of a conglomeration of tools and scripts produced as needed in-house. These solutions are limited in flexibility and scalability, and usually require dedicated technical staff to produce the web site. These customers already realize the need for automation and would probably benefit from a commercial solution.

SUMMARY OF THE INVENTION

The present invention solves these problems and others by providing a comprehensive web site creation and management system. The software application will provide a robust workflow and repository system for collaborative development and management of small to very large web sites. The system will provide functionality for web site architecture, web site administration, web site asset management, and collaborative web site management.

The system of the present invention, in a preferred embodiment, allows small to very large companies who have or desire to have a web site to create and effectively manage the web site structure and frequently change Internet-related content. The present invention provides a comprehensive web site creation and management application that provides architecture, administration, content management, and workflow functionality. The system of the present invention provides the ability to create elegant but powerful site architectures; alleviate web master overload and bottlenecks; allow storage and reuse of content; and distribute control to the web site stakeholders

A key feature of the present invention is a comprehensive web site application that allows collaboration and workflow to occur throughout the entire corporation, thus removing a large portion of the web site management tasks from the web master. Several different user types will use the product, including technical web masters, artists, graphical designers, authors and other users.

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Technical web masters will still create and maintain the base web site architecture, structural elements, and security aspects of the product such as users, roles, and privileges. Artists or graphical designers will be able to design the web page "look" by creating web page templates, while contributing sources will create and store content for later use. Multiple corporate-wide, authors will create the actual web pages using templates and stored or external content. Other users will participate in the review process.

Another key aspect of the present invention is to provide an application that does not lock the user into a particular web page creation tool. This flexibility will allow the user to continue using the application with which they are already familiar, reduce the need to immediate training on a new web page design tool, and allow the user to switch to different applications as technology evolves. The collaboration and workflow benefit will be realized immediately since the user can easily customize the workflow to their specific environment.

The technical background requirement to use the application will be to understand the web page creation and deployment process and know how to use a software application with similar complexity to a word processor. User responsibilities will include creating, updating and maintaining a portion of a web site.

The system of the present invention will be scalable and be capable of supporting from small groups up to very large distributed groups. The workflow capabilities will allow multiple users to collaboratively create, review, and publish the web site components. Users will be able to create and receive tasks, check-in and out files, and work remotely over the Internet. Content will be available to all users according to assigned roles and access privileges. Users will be able to use the web page and content creation tools with which they are most comfortable.

The system of the present invention, in a preferred embodiment, is a browser-based standalone client-server application that can be used with typical web servers. The product will be loosely integrated to the leading web page design applications.

The present invention provides a comprehensive web site management solution that allows collaborative development and total management of Internet and intranet Web sites. The system is scalable and extendible. In the preferred

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embodiment, the system comprises four modules: Administration, Architecture, Content Management, and Workflow.

The Administration module includes these features: Maintain site and content control via security and access privileges; Remotely administer multiple Web sites; Verify page syntax, links and references; Update all or part of a site with a single action; Produce comprehensive site statistics and reports; and other administrative functions.

The Architecture module includes these features: Providing an intuitive, visual representation of a Web site; Create staging, testing, and production areas; Construct complex but easy-to-navigate Web site maps; Provide abstract path mapping for publication of the same files to multiple Web server configurations; and other functions.

The Content Management module provides these features: Check-in/check-out pages and Web site resources; Interface to third party page development tools; Re-purpose and reuse content and other functions.

The Workflow module provides these features: Visually design workflow processes; Distribute control and responsibility; Preview pre-production work before deployment; Automate Web site updates and other functions.

These comprehensive and collaborative Web site management and development tools provide the capability to efficiently and effectively develop and manage web site resources.

These and other features will be evident from the following detailed description of preferred embodiments and from the drawings.

Brief Description of the Drawings

Figure 1 shows a schematic of the system architecture of a preferred embodiment of the present invention.

5   Figure 2 shows a schematic of web site using the system of Figure 1.

Figure 3 shows a screenshot of the log in window of the system of Figure 1.

Figures 4 – 38 show screenshots of the Administrative Tools of the system of Figure 1.

10   Figures 39 – 40 show screenshots of the Sitemap Settings of the system of Figure 1.

Figures 41 – 48 show screenshots of the Workflow Designer of the system of Figure 1.

Figures 49 - 54 show screenshots of the Content Builder module.

15   Figures 55 – 57 show screenshots of the Site Management module.

Figures 58 - 59 show screenshots of the Notifier module.

Figure 60 shows a screenshot of the editor for the Layout & Content and Fonts & Color module.

Figure 61 shows a screenshot of the Help menu.

20   Figures 62 – 66 show screenshots of the Task module.

Figures 68 shows a screenshot of the Workflow History window.

Figure 69 shows a screenshot of the Workflow Monitor Settings window.

Figure 70 shows a screenshot of the New Statistics Set window.

Figure 71 shows a screenshot of the log out window.

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DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The present invention provides a comprehensive web site creation and management system. The software application will provide a robust workflow and repository system for collaborative development and management of small to very large web sites. The system will provide functionality for web site architecture, web site administration, web site asset management, and collaborative web site management. The system of the present invention, in a preferred embodiment, allows small to very large companies who have or desire to have a web site to create and effectively manage the web site structure and frequently change Internet-related content. The present invention provides a comprehensive web site creation and management application that provides architecture, administration, content management, and workflow functionality. The system of the present invention provides the ability to create elegant but powerful site architectures; alleviate web master overload and bottlenecks; allow storage and reuse of content; and distribute control to the web site stakeholders

A key feature of the present invention is a comprehensive web site application that allows collaboration and workflow to occur throughout the entire corporation, thus removing a large portion of the web site management tasks from the web master. Several different user types will use the product, including technical web masters, artists, graphical designers, authors and other users.

Technical web masters will still create and maintain the base web site architecture, structural elements, and security aspects of the product such as users, roles, and privileges. Artists or graphical designers will be able to design the web page "look" by creating web page templates, while contributing sources will create and store content for later use. Multiple corporate-wide, authors will create the actual web pages using templates and stored or external content. Other users will participate in the review process.

Another key aspect of the present invention is to provide an application that does not lock the user into a particular web page creation tool. This flexibility will allow the user to continue using the application with which they are already familiar, reduce the need to immediate training on a new web page design tool, and allow the user to switch to different applications as technology

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evolves. The collaboration and workflow benefit will be realized immediately since the user can easily customize the workflow to their specific environment.

The technical background requirement to use the application will be to understand the web page creation and deployment process and know how to use a software application with similar complexity to a word processor. User responsibilities will include creating, updating and maintaining a portion of a web site.

The system of the present invention will be scalable and be capable of supporting from small groups up to very large distributed groups. The workflow capabilities will allow multiple users to collaboratively create, review, and publish the web site components. Users will be able to create and receive tasks, check-in and out files, and work remotely over the Internet. Content will be available to all users according to assigned roles and access privileges. Users will be able to use the web page and content creation tools with which they are most comfortable.

The system of the present invention, in a preferred embodiment, is a browser-based standalone client-server application that can be used with typical web servers (Microsoft, Apache, Netscape). The product will be loosely integrated to the leading web page design applications.

The comprehensive Web Site Creation and Management System of the present invention is a comprehensive solution for corporations to produce and maintain a web site. The product has four primary modules:

Web Site Architecture

Web Site Administration

Web Content Management

Total Web Site (Collaborative Web Site Management)

Web Site Architecture module

The Web Site Architecture module provides the ability to create elegant, powerful web site structures. The module provides intuitive, cognitive visual representations of the web site map. The system also provides a site map model that provides a level of abstraction above the complex blueprints. The module provides a consistent site-wide look-and-feel. The module includes specification of allowed page elements, templates, and content as well as controlled web site development and publication process. Segmented branches of the web site

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structure can be associated with corresponding privileges, access, and workflow processes.

The Web Site Architecture module components provide the visual construction and management of a site. The architecture components provide an intuitive representation of the relationship among site elements and for an understanding of the total user experience with a site. The tools of the preferred embodiment of the present invention will design a Web site and cognitively map its structure. The Web Site Architecture module presents a visual representation of the site map, the relative page locations, and all associated links. In the preferred embodiment, the site representation includes both structural elements (templates, Web pages, links, folders, individual content, content sets and the like) and functional elements (JavaBeans, ActiveX controls, Cgi scripts, servlets, etc.).

Web Site Administration

Web site administration is the process of maintaining the technical details of the Web site, such as the file organization of the content of the site. The Web Site Administration module provides simple setup of administration environment, in the preferred embodiment, with a wizard-driven setup of application and technical administration environment. The setup for the application includes set up for users, groups, and roles. The technical setup features include setup for the web server interface parameters with defaults for top 3 web servers, file system mapping, import/export preferences, security preferences and default URLs. The remote access setup includes setup for full administration capabilities from any web browser. Further setup features include flexible web site environments for work-in-progress, testing, and production as well as for staging, testing, and production web site areas. Additional setup features include an option for copying or linking page(s) into an area, technical verification of web site, extensive verification tools for static and dynamic components, version control and backup and recovery of site components and content, backup, restore and archive capabilities, rollback available, fast and reliable method to update production web site, single button update of part or all of production web site server, and integrated file transfer. Other traditional administration functions are provided as well.

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Web Content Management module

Web content management includes the process of designing the Web page templates, background visuals, placeholders, and other page and site elements. The Web Content Management module provides an asset repository that allows organized, efficient, reuse of pages and content. The module provides integrated asset repository query and check-in/check-out of web pages and content. The module also provides Web page creation tool integration. Technical verification of web pages may also be provided. The tool actions of this module can be integrated with repository and workflow. The module also provides image conversion capabilities and integrated tools to convert one image type to another.

Total Web Site Management module

Total Web site management focus on collaboration and extended Web site administration functions. The Total Web Site management module of the preferred embodiment of the present invention provides control of web site content management that can be distributed to the content owners and information stakeholders. This module provides collaboration and routing enabled by workflow capabilities. This collaboration allows multiple users or groups to be authorized to create, review, deploy, and maintain segments of the Web site and to perform web master functions. Either the web master or an individual department can design flexible workflow processes that ensure control, but allow distributed responsibility. The module provides intuitive visual workflow definition tool. Authorized users can update content and expeditiously deploy it to the production web site with minimum risk. Workflow and custom rules may be specified for review and approval process. Automated update transfer to production site. Also, the module provides pre-production review of web pages and the entire site. Staging and testing areas are provided by the module to allow review of work-in-progress or complete site before deployment. Other features include simple setup of "my.homepage" environment. A wizard-driven setup of working homepage environment to make each user comfortable and most effective. Roles, privileges and access control can be established as well using the Web Site administration components to maintain security over the site.

General System Requirements

The General System Requirements are the 'framework' pieces which comprise the system as a whole. Each individual component, and each function module inside each component, will exist inside this framework. The pieces included in the General System Requirements include licensing issues, installer tool, application security, general application administrative functions, help, and settings. Also included are global functionality requirements such as notification and report generation.

The system of the preferred embodiment allows for the addition or removal of application function modules. The added function module's supporting features (help, settings, roles, privileges, if applicable) are made available to users, but not necessarily through tight integration with the system's existing supporting features. 'Hot-swapping' or 'plug-and-play' of added functional modules is not required. The user is able to "Undo" as many previous actions as the user has made since a module was opened or since data was last saved. all module interfaces are scrollable and resizable as appropriate and necessary. The user is able to pan a module in all directions, where applicable as well as zoom in and out from any area of a module, where applicable.

The system of the preferred embodiment provides a mechanism for scheduling tasks, events, and notifications based on either a specific time or a recurring event, where applicable. The system also allows multiple web sites to be administered. The licensing of the system will specify the maximum number of production sites that may be administered. The application encodes the customer's chosen licensing model in a manner that resists tampering. An installer application installs necessary software in the appropriate locations. The architecture module client define and configure each web server remotely rather than through the web server itself.

Security

The system security requires users to enter a login name and password to access the system. The specific text entered for the password will be masked by the system. All authentication data be encrypted for any network transmission. The system provide a configurable audit trail that can track successful or unsuccessful actions or access. The audit trail be available only as a log file or

as a report derived from the log file information. The system will not augment or interpret the information in the audit trail.

Help

An on-line help system is provided by the system of the preferred embodiment. The purpose of the on-line help system is to provide users of the application with a quick reference for information concerning "how-to" perform a task. The primary goal of the help system is to allow users to easily and efficiently find solutions to common problems or questions, and then return to work quickly. The help system allows additions, modifications, and updates for specific topic information to be installed without forcing the user to update or load the entire help system. The help system is accessible from all application modules via a button, hyperlink, or function key, or via a combination of these methods as appropriate. The help system requires only one action (mouse click or keystroke) to access and exit. The help system allows the user to find information easily, via the following methods:

Hierarchical Table of Contents: the help system table of content format provides a hierarchical tree structure with expandable and collapsible nodes.

Multi-Level Index: the help system provides a multi-level index.

Full Text Search: the help system provides full-text search capabilities.

Context-Sensitivity: the help system provides help that is context-sensitive.

Related Topics Links: the help system has a hyper-linked listing of areas of related topics.

Hyperlink Definitions: the help system allows specified terms or phrases to be linked to a definition of the term.

Settings

The system of the preferred embodiment provides multiple levels of application and technical settings. The system, in a preferred embodiment allows the user's personal settings to be configured and saved both globally and at a function module level.

The preferred embodiment also provides for settings for the Layout & Content of the Web site. The user is able to choose whether an available module function is embedded in the main window, shown as a button on the module toolbar, or not displayed at all. The user is able to define the application's main

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window as being comprised of either one or two columns. Columns are set to be of any ratio of the browser window width. The user is allowed to specify the order in which module buttons are displayed in the module toolbar. The user is allowed to specify the size of the buttons displayed in the module toolbar. The size of the buttons chosen for the module toolbar remains constant throughout all screens displayed for that user. Privileges associated with any modules that are not displayed on the user's main page or module toolbar are retained.

The settings for the Colors & Fonts of the system are also able to be set by the user. The user is able to define the background color of the browser window. The user defines the color of the header bar and the sub-header (accent) color. The user also selects a default font to be used in all browser windows from a list of fonts installed on the user's system. The default font color used in the browser window is also selected by the user as well as the font color used in the header bar as well as the font color used in the sub-header.

The settings unique to each individual function module are discussed in more specific detail in the description of the function module requirements. Each of the modules maybe be configured by the user to display a specific number of rows, where applicable. The user is able to configure a module to show only the columns specified by the user, where applicable. The modules may be configured to display the selected columns in an order specified by the user, where applicable. A module may also be configured to sort the contents of a column either by ascending or descending criteria, where applicable. Any configuration made to a module's settings into the display and functionality of that module incorporated into the system.

Users, Groups & Roles

A system administration function is provided allowing for the creation, definition, and maintenance of users, groups, and roles. All user, group, and role data for any network transmission is encrypted by the system for additional security. Named privileges for all user interactions with the system are provided. The user is able to assign individual privileges only to a role and not directly to a user or group. The creation and definition of a role as a specified collection of privileges is provided by the system. The user is able to assign a name and description to a role as well as to add or remove privileges from a role. The user may assign a role only to a user and not to a group. The system allows the

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creation and definition of a group as a specified collection of users and/or groups. The user to assign a name and description to a group, to add or remove any number of users to a group, from zero to many and add or remove any number of groups to a group, from zero to many. Creation and definition of a user as an individual authorized to interact with the system is provided as well. The user is able to assign a name to a user. The user is authenticated in the system by performing native authentication from the underlying operating system. The user may also associate an e-mail address with a user.

The user is required to assign a workspace (defined below) and a role to each user. The user may only assign one role per workspace. The user may be assigned to any number of workspaces, from one to many. A user may also be assigned to any number of groups, from zero to many.

Workspaces

Workspaces are a collection of every asset that a user or group might need access, such as content, workflow templates, and workflow resources. Additionally, file categories (defined below) can be assigned to a workspace definition. Through this access control, an administrator can limit the areas of the site or the tasks that a department can view or alter.

The user is able to define a 'workspace' area to control access to content, resources, and workflow templates used in the system. The workspace area be defined as:

Content Set: pages and elements from the content repository. This could be a portion of the content on a web site, a complete web site, or multiple web sites, along with other files used in web site design and publishing.

File Categories: default file paths assigned to a content type. Any number of file categories will be allowed, from zero to many.

Resource Set: system-performed tasks and scripts. Any number of resources will be allowed, from zero to many.

Workflow Set: allowable workflow templates (defined below) that can be initiated. Any number of workflow templates will be allowed, from zero to many.

Participant Set (defined below): the default participant set used in a workflow initiation. Any number of participant sets will be allowed, from zero to many.

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Notification Module

A notification module is provided to notify users of system errors, events, or scheduled reminders. The user is able to open the notification module and retrieve notifications without requiring the user to perform a full, authenticated log-in to the system. The user is able to specify regular or global events that will be considered notification events for that user and to specify the frequency that the notification module checks for notifications from the system. The user is alerted of the receipt of a notification from the system through an alert method, including:

Visual Cue: displays an alert box, flashes an icon, or displays some other visual indicator to alert the user that a notification has been received.

Aural Cue: plays a configurable sound to alert the user that a notification has been received.

Multiple Cues: provides both a visual and aural cue to alert the user that a notification has been received.

The user may retain notifications after they have been displayed. Notifications are sent via e-mail for licensed users of the system.

General Reports

The user may configure the parameters of a report based on:

A specified time range

The actions of a user

The functionality of a module

A combination of the above

The results of a report may be displayed in a web browser, exported to an external file and/or printed.

Web Site Architecture

Web site architecture is defined as the visual representation of the web site elements and the overall cognitive understanding of the web site layout. It is similar to a building model visually representing the underlying blueprints. Key features of the architecture should be immediately grasped and understood by the viewer, without having to "imagine" what the flat blueprint represents spatially. Intuitiveness and logic are emphasized in the visual aspects of the web site representation and are considered key features of the system.

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The Web site architecture module provides the ability to create the web site map, a visual representation of the underlying web site blueprint. The visual model of the more technical details provides an intuitive level of abstraction for the less technical end-user. Some of the key aspects of the underlying architecture that must be "translated" to a visual representation include structural elements, associated attributes, and element interrelationships.

The web site architecture module performs the following functions:

Create and define a web site

Configure the file structure of a web server

View and edit a map of the web site

Web Site Creation and Definition

This function provides the definition of a new or existing web site. Fields and settings are provided to the user to identify the web server and provide configuration information. Default information is obtained from the web server, including web server software type, existing file structure, operating system, and hardware type.

The following attribute fields describe a web site:

Name: The text that will be used to identify the web site in all lists, headings, and reports.

URL: The URL location for the web site.

Description: A more complete free-text description of the web site and its contents.

Web Site Type: A parameter that is displayed with the Name field in lists, headings, and reports.

The Web Site Type includes:

Testing: an intermediary server where content is placed directly prior to being sent to the production server. Quality Assurance and other testing likely will be performed on content on this server.

Production: the live web server, viewable from the outside world. The user is required to associate each testing server to an existing production server.

File Structure Configuration

For all intents and purposes, the application will act as a translator between the content repository and the web server. Because the file structure in the content repository and the web server are unlikely to match (and because file

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structures on different web servers may be set up differently), the application will associate a checked-in document with the file's future location on the web server. This association will be based on a mapped location that is set by the web site architect.

For example, a site's product HTML documents are stored in '/products/' and the images associated with those documents are located in the '/products/image/' web server directory. The application would automatically associate any check-in designated as part of the 'Product' category with these directory locations, and would—upon publishing—place these documents in their correct location.

This concept keeps the designer, writer, or stakeholder from needing to know the intricate details of the web server's file structure. The only required knowledge is the document's category, as described below.

The file structure configuration to be used on the web server is designated by the user. The user is allowed to import the file structure configuration from an existing web server.

The user is able to create and define document 'categories' to classify web site content. The user is allowed to create specific web server file paths to be associated with content that will be transferred to the web server from the content repository based on the assigned category. Optional load balancing of content is provided by specifying a load limits and additional paths for web server directories.

The user is allowed to define a category by associating web server file paths with the following file type classifications:

HTML

Images

Media

Scripts

Stylesheets

Executables

Downloads

Other

Default MIME type extensions to be associated with a file type classification are provided. The user is able to customize the MIME types

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associated with a file type classification, but will not allow the user to add, modify, or delete the classifications themselves. Any MIME type not specified in one of the other categories is treated as belonging to the 'Other' classification.

General Web Site Map

A folder-and-file view of the web server file structure is provided in the system of the preferred embodiment. Also, a graphical layout view of the web server page structure and interrelated links is provided. The following attributes describe a web site map element:

Label: the text that will be used to identify the element in all lists, headings, and reports. The user will have an option to automatically enter the text from the title or filename field as the default label text.

Title: the full text title of the page, which may be the same as the label text.

Filename: the actual filename of the element.

Description: a free-text description of the element.

Keywords: the keyword designations of an element.

File type: the MIME extension type of the element

Comments: an area for users to enter comments about the page, its contents, or its usage.

Created by: the username of the original author of the element.

Created date and time: the date and time the element was originally created.

Modified by: the username who last modified the element.

Modified date and time: the date and time the element was last modified.

The attribute sheet of a web site element may be displayed by the user. The user is able to view a named baseline version of the production web site at any point in time (past, present, or scheduled.) The user is able to view only the most recently published version of the testing web site.

A date and time when an individual element has expired and is considered stale may be specified by the user. A benchmark date and time to notify a user prior to an element becoming stale may also be specified. The user is able to specify a user to notify via the notification module when an element reaches a benchmark date or has expired. An automatic workflow initiation when an element has reached a benchmark date or has expired may also be specified. The

user may also indicate that an individual element never expires and never becomes stale.

The web site map utilizes color-coding, icons, labels, and rollover pop-ups to provide meaning to the visual elements. The web site map will visually indicate an element's type via the displayed icon. Visual indicators are used to represent the freshness ('staleability') of the elements comprising an entire site. The user is able to define global staleability with a configurable date range based on the 'last date modified' field. The user is also able to choose whether global staleability status is displayed or hidden. Individually stale items are displayed even if global staleability is hidden. The site map visually indicates if a displayed element is currently checked out of the repository.

The web site map allows the user to operate in the following "rollover" modes which will display information when a user places the mouse cursor directly over an element:

No Rollover mode

Description mode

Statistics mode

The user is allowed to configure the default mode via a preference.

No Rollover Mode

Any rollover information is hidden when No Rollover mode is selected.

Description Mode

The description mode displays selected (configured or default) element attributes when a user rolls over the map element with the mouse pointer. A description mode preference allows the user to select the map element attributes to be displayed.

Statistics Mode

The statistics mode displays selected (configured or default) statistics when a user rolls over an element on the site map. A statistics mode preference allows the user to select the map element statistics to be displayed. The available site statistics are identified below in detail. When in the graphical layout sitemap view, the statistics mode allows a user to display a visual representation of the shortest path and the most traveled path from a selected element and a rolled-over element. The statistics mode displays the number of hits on each link of the shortest and most traveled paths between the selected element and the 'rolled-

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over' element. A statistics preference allows the user to select the time period over which the hits to the element should be computed. The site map allows the user to display the selected web site element in a web browser.

Folder-And-File View

The folder-and-file view allows branches to be expanded or collapsed at all nodes of the file structure tree that contain child elements. The folder-and-file view indicates that child elements exist by a visual cue (similar to + and arrow in PC and Mac applications respectively). The folder-and-file view allows drill-down to node elements, and thus will display the selected node as the root node with all higher-level nodes not displayed. The folder-and-file view allows a user to expand a web page node to display the individual web elements that comprise the page.

Graphical Layout View

The system provides the following graphical layout views for the site map elements:

Hierarchical

Symmetrical

The user is able to drill-down in the graphical layout view to display all elements that comprise a web page. Links into and from a page are visually displayed.

Web Site Editor

The web site editor tool is an extension of the graphical layout view of the web site map and will be the primary way that an architect adds and amends pages on a web site. Combined with the workflow modules, the architect can use this tool to automatically generate a page request workflow instance (or assign an individual task to notify the person responsible for the page, so that stakeholder can generate the page request workflow).

Even without workflow, the architect can map out the future locations and attributes of the pages (or elements) with placeholders and then manually associate the placeholder with an existing file in the repository.

The user is able to add, move, and remove links, pages and elements from the web site through a web site editor tool.

Adding a Web Site Element

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The web site editor tool allows a user to add a placeholder icon to the web site map to represent a planned addition to the web site. The web site editor tool requires a user to assign a file 'category' (as defined above) to a placeholder element. This category will determine the future web server file location of the element when it is uploaded onto the web server.

The application allows a link (or planned link request) to be established between the web element placeholder and an existing page or placeholder. A visual indicator is used to signify that an actual link has not yet been established between pages and/or placeholders. The user is required to associate a placeholder icon with an element in the content repository before a link or page will be considered 'live' on the web site. Elements are only allowed to be added to the web site by association with a placeholder or through an import function (described below). The user is able to automatically route the tasks associated with element creation through a workflow process, if available.

Moving a Web Site Element

The user is able to select and reposition individual visual elements.

Removing a Web Site Element

The user is able to remove a link, page, or element from the web site. The user may request an automatic 'spot-verification' to list the surrounding links, elements, and objects that are affected by the removal of a web site element. The user is allowed to initiate a workflow instance to repair any broken or malformed links caused by the removal of a web site element, if available.

Web Site Administration

Web site administration is the process of maintaining the production and testing areas on the web server and administration of the publishing mechanism (usually through FTP facilities and associated scripts). The Workflow module described later allows many web site administration functions to be performed by specified users or by the system according to automated scripts. This allows sections of the web site to be managed and maintained by non-technical web masters. The emphasis is to allow the corporation or central web site administration group to maintain control of the web site, while allowing distribution of administration functions for efficiency. The user is allowed to perform statistics reporting, web site publishing, general site administration, and site verification through a web site administration application.

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Statistics

A configurable mechanism for collecting, analyzing, and filtering web site statistics is provided by the system. The user is allowed to save and run a statistics set, manually, or by scheduling it to run automatically. The user is allowed to display the values associated with statistics in numerical and/or percentage formats, as appropriate. The user is required to select a time frame over which statistics will be compiled. The user is allowed to select several time frames to compile and analyze simultaneously. The user is allowed to select a set of parameters with which to create a statistics set.

The parameters used to create a statistics set include:

Total Hits: number of accesses to non-image, non-media pages.

Total Files: number of accesses to all files, regardless of file type.

Total KB: amount of data transferred.

Sessions: number of visits from unique IP addresses.

Pages Accessed: number of unique pages on the web site accessed by visitors.

Referrers: number of unique URLs viewed by visitors directly prior to accessing a page on the web site.

Browsers: number of different browser versions used to access pages on the web site.

The user is allowed to save a statistics set as a named configuration. The user is allowed to select specific areas of the site on which to gather and analyze statistics, including non-contiguous files or links. The user is allowed to list details of a statistics set, including:

Most Requested Pages: page names and identities that have received the highest number of hits over the specified time period.

Least Requested Pages: page names and identities that have received the fewest number of hits over the specified time period.

Most Common Point Of Entry: page names and identities that are most often identified as the beginning of a visitor session.

Most Common Error Code: most common non-200 codes returned to the server, and the URLs most often listed with those error codes.

Top Referrers: most often identified unique URLs viewed by visitors directly prior to accessing a page on the web site.

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Top Countries: most common country origin, as determined by ISP primary domain identity.

Top Downloads: most common non-image, non-text files accessed by visitors.

Top Browsers: most common browser versions used to access pages on the web site.

The user is allowed to display statistical ratios and averages, including:

Average hits per day over a specified time

Maximum hits per day during a specified time

Average hits per hour over a specified time

Maximum hits per hour during a specified time

Ratio of hits to two different pages (such as Main Menu and News)

Ratio of hits to a page and a downloaded file

Slow pages based on download time are identified. A slow-page mode preference allows the user to define the benchmarks and limits used to qualify a page as slow.

The user is allowed to limit the analysis of statistic data to include or exclude an IP address or an IP address block.

Verification

The user is allowed to verify page and site structure through the web site administration tool. The user is allowed to save and run a verification configuration. The user is allowed to run a verification configuration manually, or by scheduling it to run automatically.

The user is allowed to select specific areas of the site to run an analysis, including non-contiguous files or links. The user is allowed to specify and store an analysis configuration including the documents checked and the types of verifications performed.

HTML tag syntax verification is provided by the system. The system verifies compliance with published HTML standards from 1.0 to 4.0 and can be updated for future standards. The system performs XML tag syntax verification against a DTD, if one is specified. The system also verifies the existence and validity of target files referenced within an XML document. The system verifies the existence and validity of target files referenced within an HTML document. The system recognizes as valid any target file whose file type extension is

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included in the MIME type list on the associated web server. The system notifies the user if a file type extension is referenced within a web page which is not included in the MIME type list on the associated web server. Target file verification is limited to HTML tag targets.

Orphan files are also identified as well as files that are unused in the web site or duplicate files. HTML pages whose <TITLE> tags contain no text or are missing are identified. Directories on the web server that do not contain a default index page (e.g. 'index.html') as specified in the web server config file are also identified.

Graphical attributes of an image are used to identify incorrect or missing WIDTH and HEIGHT parameters inside IMG tags.

Web Site Publishing

A fully integrated upload mechanism to publish specified pages, sections, or the entire web site is provided by the system. The system allows upload via FTP, NFS, and/or Windows Remote Volume Access protocols. The user is allowed to configure the upload mechanism to publish content at a specified date and time. The user is allowed to select upload content based upon the following criteria:

All: selects all content files used on the Testing or Production web site.

Modified: selects files that have been modified since the last upload performed by the system.

Directory: selects all files in a specified directory on the web site's file structure.

File Type: selects all files of a specified file type.

Approved: selects files that have been approved through a workflow process and flagged to be published.

Missing: selects files that are identified as missing from the current version of the web site.

Check-box: individual files as selected from a list of all available files on the web site.

The user is required to identify the location to which the content will be uploaded (testing or production). The default content location be 'production.' A single step update to move or copy content between the testing and production sites is provided.

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Web Site Versioning

The ability to create a named baseline version of the production site by 'baselining' the web site configuration (including the identification of content) is provided by the system. The user is allowed to schedule an automatic baselining of a web site configuration. The system allows for a version of the web site configuration to be baselined manually. The ability to rollback and restore a portion or all of a web site to a previous version of the site to restore by specifying a time and date or by selecting a named baseline version is also provided.

Content Management

Content management is the storage and reuse of web page elements, content templates, and other documents. The content repository stores the digital file types supported by the corresponding version of QuarkDMS or other database management system. The system is be able to integrate fully with an existing QuarkDMS repository or other database management system repository. The system is integratable with 3rd-party client authoring applications Microsoft FrontPage and Dreamweaver. The level of integration is menu-level at a minimum, with drag-and-drop of content from the results query palette to the application layout the final goal. The system allows storage of and access to content, content templates, and functional components. Version control for all structural, functional and content elements (layout, page, content) is provided.

Content Query

Query capabilities on content attribute information are provided to the user. The user is allowed to create a set of criteria to define a query. The user is allowed to define attribute conditions on a query. The system allows attribute conditions to be combined (AND), inclusive (OR) or exclusive (NOT). The user is allowed to define full text search conditions on a query. The user is allowed to remove a criteria condition from a query.

The system possesses the ability to count the results of a query before saving or running the query. The user is allowed to save a set of criteria as a named query. The user is allowed to run a saved query. The user is allowed to save and run a query as a one-step function. The user is allowed to edit a saved query. The user is allowed to duplicate a saved query. The user is allowed to delete a saved query. The user is allowed to display the results of a content query.

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The system provides a preview of the content file for the output types supported by the corresponding version of QuarkDMS or other repository. The user is allowed to view multiple versions of a content file. The user is allowed to view all files in the repository that are linked to a specific content file. The user is allowed to print the query results.

Content Addition and Check In

The system allows content to be added and checked in to the content repository. The user is allowed to identify a file to be added or checked in. The file to be checked in is automatically reconciled with a previous check out action performed on the content by the user. The system provides a preference to remove an original content file from the user's computer hard drive after the content file has been successfully added or checked in to the content repository.

The system automatically captures attribute information about the content file being added or checked in, including the following, as applicable:

File Name: the actual filename of the file being added or checked in

File Type: the type of file being added or checked in

File Size: the size, in kilobytes, of the digital file being added or checked in

Creation Date: the date and time that the file was added or checked in

Creator Application: if the file was created on a Macintosh, the creator ID tag associated with the file type

Modification Date: the date and time the file was last modified

Bit Depth: the accuracy level of an image or audio file's color or sound, respectively

Image Height: the height, in pixels, of an image file

Image Width: the width, in pixels, of an image file

Sample Rate: the number of samples per second that an audio file was recorded

Version: the internal repository version number

The system presents the user with additional permanent attribute fields to be completed manually, including the following:

Title

Description

Label

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Keywords

Comments

Category

The system provides an option to automatically enter Keyword and Description information from META tags found inside an HTML document into the appropriate attribute fields. The system provides an option to automatically enter text located inside the web page's TITLE tag into the title attribute field. The system provides an option to automatically enter the text in the title field or the filename field into the label field.

Web Site Import

The user is allowed to add or check-in (import) existing web site content into the content repository. The user is allowed to select a web site to import from a list of defined web sites. The user is allowed to import an entire site from the web server as a new version of that site. The user is allowed to specify the files to be import from the web server via one of the following methods:

Manual: files selected from a list of available files via a checkmark or other selection indicator.

Time Range: files modified during a specified time range.

Last Upload: files modified since the last upload from the application.

Content Check Out

The system allows content to be checked out from the content repository. The system requires the user to specify a check out folder. The system provides the user with a preference to save the check out folder location. The system provides the user with a preference to either check out an element into a default file structure or to mimic the file structure of a specified web server configuration. The user is allowed to abort the check out of an element. The user is allowed to download a read-only version of the content.

Content Archiving

The user is allowed to request an archive of the content repository. The system provides a mechanism to facilitate archiving of content located in the content repository. The user is allowed to signify which content will be marked for archiving by setting one of the following parameters:

Check-box: individual files as selected from a list of all available files in the content repository.

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Modification Date: selects files whose date of last modification is prior to the specified date.

Past Versions: selects past versions of files that have multiple versions in the content repository.

File Type: selects all content of a specified file type designation.

Category: selects all content assigned to a specified category.

The system stores the identifying header information associated with an archived file. The user is allowed to perform queries on archived file header information, but will not allow a full-text query to be performed on an archived file. The system provides archive dates and locations in query results. The system allows archived content to be retrieved and restored into the content repository.

Content Deletion

The user is allowed to request a content file be deleted from the content repository. The user is allowed to delete content from the content repository. The user is allowed to signify which content will be marked for deletion by setting one of the following parameters:

Archived Items: items archived through the system's archive mechanism.

Check-box: individual files as selected from a list of all available files in the content repository.

Requested Items: chooses the files that users have marked for deletion through a query function.

File Type: selects all content of a specified file type designation.

Category: selects all content assigned to a specified category.

The system alerts the user if an item marked for deletion is identified as an element used on the current version of the web site.

Content Management Administration

The system allows the administrator to add additional attribute fields to be completed at check in. The system allows the administrator to configure any additional attribute field as being optional or mandatory.

Workflow & Task List

The Workflow module focuses on collaboration and distributed web site administration functions. Collaborative web site management is the process of allowing multiple users and groups to create, review, deploy, and maintain

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segments of the web site. Roles, privileges, and access control (set via the application administration modules) are used to maintain security over the site. The system allows collaborative work to occur according to a workflow process. The system provides a flexible workflow definition application. The workflow definition application allows the user to work offline through a standalone version of the application.

The user is allowed to save workflow templates, participant sets, and other necessary files to the user's local file system for use in an offline scenario. The system provides a workflow engine.

Workflow Administration Overview

The system provides a flexible workflow administration application to create and store workflow templates, workflow resources, task forms, and participant sets. The system allows creation, definition, storage, and access to workflow templates.

Custom Workflow Template Creation

The user is allowed to open and edit a new or existing workflow template. The user is allowed to define the global attributes of the workflow template through the following fields:

Name: the name of the workflow template.

Description: a free-text description of the general functionality and purpose of the workflow process.

History Logging: the user may choose whether the events and actions associated with the workflow process will be recorded in a workflow log, and which actions will be recorded (Start, Complete, Reject, Forward, Approve, Consult).

The system provides the ability to create workflow process steps as part of a workflow template. The system visually displays workflow steps. The system automatically provides a Start and a Stop workflow step upon creation of a new template. The Start and Stop workflow steps will be permanent, and will not have attributes sheets. The user is allowed to select and reposition a workflow step. The user is allowed to remove a workflow step. The user is allowed to establish a link between two workflow steps. The user is allowed to remove a link between two workflow steps. The user is allowed to verify the

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validity of a workflow step or series of steps. The user is allowed to test the functionality of a workflow template.

Workflow Step Types

Participant: The user is allowed to add a participant workflow step to be performed by a user or group.

Resource: The user is allowed to add an automated workflow step (resource) to be performed by the system.

Decision Point: The user is allowed to apply a rule to a workflow step that will determine which one of several workflow steps will be initiated.

Split Point: the system allows several workflow steps to be initiated simultaneously based on the completion of one workflow step.

Join Point: the system allows a single workflow step to be initiated based on the completion of several (or a portion of several) workflow steps.

Workflow Step Attributes Definition

The user is allowed to identify the actions of a workflow step via a workflow step attributes sheet. The user is allowed to define the following workflow step attributes:

Step Name: The user is allowed to define a generic name for the step, also serving as the workflow step icon label. (All workflow steps)

Step Description: The user is allowed to define a generic description of the step. (All workflow steps)

Step Type: The user is allowed to define a participant, resource, decision, split, or join. (All workflow steps)

Specific Instructions: The user is allowed to provide a more detailed description of the workflow step, to be included in the "Description" field in the task list attributes window. (Participant workflow step only) Task Form Type: The user is allowed to select a pre-configured layout of information as seen in the task list attributes sheet. The user may preview the selected task form type. The user can specify that a different form be used in a task consultation. (Participant workflow step only)

Conditions: The user is allowed to define the following conditions:

Schedule: the time and date that a task is delivered to a user or that an action will be started. (Participant and resource workflow steps only)

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Escalation: the participant who will be notified in the event of an alert, a rejection, a complication, or lapsed due date. (Participant and resource workflow steps only)

Notification: the participant(s) who will receive notification on the completion of an event or workflow step. (Participant and resource workflow steps only)

Reminder: the participant(s) who will receive notification before a due-date event that an assigned task has not been completed. (Participant workflow steps only)

Rule: the If-Then-Else equation of defined workflow variables and/or system workflow variables whose result will define the path(s) to be followed. (Decision and join workflow steps only)

Completion Condition: the trigger (Complete, Approve, Approve With Comments, or Reject) that causes a workflow step to be completed and for the workflow process to continue to the next step. (All workflow steps)

Participants: The user is allowed to define the users assigned to a task, or a generic participant name that will be filled by a specific user or group of users upon workflow process initiation. (Participant workflow step only)

The system be able to send notifications to users at the start or completion of the associated workflow step. The user is allowed to choose to designate a participant task as a group task (all users in a group will participate) or a pool task (one user from a group will participate). The user is allowed to select a resource. The user is allowed to configure any necessary parameter fields associated with the selected resource. The system automatically prompts the user to define the workflow step attributes when the workflow step is placed on the workflow template. The user is allowed to set a preference disabling automatic attribute definition. The user is allowed to verify that all steps of a workflow template have been satisfactorily defined. The system alerts the user if any required workflow step attributes have not been satisfactorily defined. The user is allowed to specify that a workflow template is completed and ready for initiation. The system requires that the minimum workflow step attributes have been defined before allowing a workflow template to be initiated.

Custom Task Form Creation

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The system will include a number of pre-packaged forms to display task attributes and descriptions, but the system will also allow users to customize task forms to include different configurations, different functions, and different user-defined areas.

5   The user is allowed to create and save a customized Task Form, including user-defined fields. The user is allowed to utilize a customized Task Form in the assignment of a workflow step. The system provides a form-editing tool that will allow the following:

Addition, configuration, and removal of toolbar buttons.

10   Addition, configuration, and removal of data fields, including system-defined and user-defined fields.

Addition, configuration, and removal of tabbed items, including system-defined and user-defined items.

The system provides the following toolbar buttons to be available in
15   creating or editing a workflow Task Form:

Start Task

Pause (and Resume)

Forward

Consult

20   Complete Task

Accept

Accept With Comments

Reject

Check In Asset

25   Check Out Asset

Add Comment

The system requires that a Task Form contain at least one completion toolbar button (Complete Task, Approve, Approve with Comments, Reject, or Forward). The system provide the following default header fields to be available
30   in creating or editing a workflow Task Form:

Task Name

Status

Priority

Contact

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Assignee

Date & Time Received

Date & Time Due

Date & Time Started

Date & Time Completed

Total Time Elapsed

Workspace

Workflow Name

The user is allowed to create custom header fields by specifying the following:

Field Type: Text (with length parameter), Date & Time (with formatting parameter), or Number (with decimal point parameter).

Field Label: Text label associated with the field.

Help Description: The content displayed as part of the Help text for the associated field.

The system provide the following default tabbed items to be used in creating or editing a workflow Task Form:

Description: a full text description of the workflow step instructions. This item will display the value from the 'Specific Instructions' attribute of the workflow step.

Comments: a full listing of every comment added by users associated with the workflow instance.

History: a full listing of every logged event associated with the workflow instance.

Attachments: an iconographic display of files that are attached or associated with the workflow step.

The user is allowed to create custom tabbed items by specifying the following:

Tab Label: text label displayed in the tab

Tab Position: the location of the tab with relation to other tabbed items in the Task Form

The user is allowed to add, modify and remove fields in a tabbed item. The user is allowed to specify the existence and relative width of up to two columns in the header and tab fields of the Task Form.

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Participant Set Creation & Editing

The system allows the creation, definition, and storage of a set of users identified as a participant set. The system requires the user to provide a name for a participant set. The system displays a list of participants used in the definition of available workflow templates and allow the user to assign specific users to be associated with each individual participant in a workflow instance. The system allows a participant set to have unassigned participants. The user is allowed to modify, duplicate, delete, and save a participant set.

Workflow Initiation

The system allows a user to initiate a workflow. The system allows a user to select an available workflow template from a list of templates that can be initialized. The user is allowed to graphically preview a workflow template prior to initiation. However, the system will not allow the user to add, change, or remove workflow steps from the workflow template. The system restricts the display of available workflow templates to those allowed inside the user's workspace.

The system requires the user to provide a unique name for the workflow instance. The system requires the user to assign users or groups to all workflow template participants. The system provides the ability to utilize a pre-configured participant set to automatically assign users to template participants. The user is allowed to change or augment any participant assignments that were configured through a participant set.

The system requires the user to specify a user to whom a workflow task should be routed if the task is rejected by the original assigned user. The system requires the user to enter at initiation any required data that was not pre-configured in the workflow template. The user is allowed to enter at initiation any non-required data for any workflow steps. The user is allowed to associate a file or multiple files from the content repository or files, multiple files, or a directory from the network file system with a workflow process or workflow step. The user is allowed to specify whether the reference to an associated file is fixed (specific version) or floating (most recent version). The user is allowed to start a workflow instance automatically upon initiation or via a schedule. The user is allowed to start a workflow instance automatically based on the occurrence of a specified event.

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Individual Task Assignment

The user is allowed to create and initiate an individual task assignment. Individual task assignments are displayed in the assignee's task list.

Task List

The system provides task management for all named, licensed users defined in the system. The system provides a task list to display specific tasks assigned to a user. The system allows the information in the Status, Attachment and Priority attribute columns to be displayed graphically. The user is allowed to configure the content, style, and attributes of the task list.

Task Attributes Sheet

The user is allowed to display the attributes associated with a task via a task attributes sheet. The user is allowed to start a task through the task attributes sheet. The user is allowed to complete a task through the task attributes sheet. The user is allowed to approve a review task with or without comments. The user is allowed to reject a task and send it to a user specified in the workflow. The user is allowed to forward (delegate) a task to another user, based on privileges. The user is allowed to forward a task for consultation to a consultant's task list.

The system sends the completed consultation task to the requestor's task list as a new task. The user is allowed to enter and display comments regarding a task via the task attributes sheet.

Workflow Monitor

The system provides the ability to monitor a workflow process. The user is allowed to view a detailed representation of the workflow progress as a text-based tabular view. The user is allowed to view a detailed representation of the workflow progress as an icon-based graphical view. The system allows the user remove completed workflow processes from the workflow monitor. The user is allowed to display the following columns:

Workflow Name

Current Task Name

Current Task Start Date & Time

Current Task Status

Current Task Started By

Any user-defined fields

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The user is allowed to 'drill-down' into any displayed workflow step to see the details of the task, including the full description, header information, start time, completion time, comments, history, and attachments. The workflow step drill-down is displayed in the task form style selected for that workflow step.

The system not allow the user to add or delete any workflow steps while monitoring a workflow. The user is allowed to override and/or abort a workflow step. If override privileges have been granted, The user is allowed to change the attributes and assignments of a workflow step through the drill-down task view. If abort privileges have been granted, The user is allowed to abort a workflow step or a workflow instance via an abort command.

Tabular View

The user is allowed to view a list of the completed or current steps of a workflow in a text-based tabular format. The user is allowed to display the following columns:

Task Name

Status

Attachment

Priority

Contact

Assignee

Date & Time Received

Date & Time Due

Date & Time Started

Date & Time Completed

Workspace

Workflow Name

Description

Comments

Graphical View

The user is allowed to view a graphical representation of completed, current, or upcoming workflow steps in an icon-based graphical layout. The system display the status of a workflow step through a visual indicator. The user is allowed to display a configurable 'roll-over' that will provide a summary of a workflow step (user, status, description, due date).

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Other Product Requirements

Applicable Standards

The system utilizes the TCP/IP communication protocol. The system supports an SMTP-compliant mail server for any e-mail needs.

5   System Environment Requirements

The system requirements define the basic, minimal platforms that the system operate. It is important to not eliminate any standard hardware, operating system, or database platform unless absolutely necessary.

The application server executes on an Intel-processor based hardware
10   platform with the Windows NT operating system platform. The application servers also may execute on the Sun hardware platform with the Solaris operating system platform. The client application operates completely within a browser interface. The client application requires the user to use an HTML 4.0-compliant browser. The client application requires the user to provide a Java 1.2.2 runtime
15   environment.

Performance Requirements

The system is capable of maintaining up to 500 simultaneous connections. The system is capable of tracking, maintaining, and displaying up to 100,000 web pages. The system is capable of tracking, maintaining, and
20   displaying up to 500,000 assets.

The system provides a user experience similar in speed and functionality to standard web surfing.

A description of a preferred embodiment is set forth below in connection with the drawings. This descriptive embodiment is intended for explanatory
25   purposes and is not meant to limit the above description of the present invention.

The preferred embodiment of the present invention includes a browser based system for ease of use, such as Internet Explorer or Netscape Navigator. As shown on Figures 1 – 2, a browser interface is connected to an Internet/intranet network utilizing TCP/IP connections to web servers, such as
30   Apache, Netscape, Internet Information Server or other web servers where the Web Site Management application resides. These servers are connected through a local network to the Content Management application server and the Workflow Engine application server.

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The user initiates the system and processes of the present invention through the browser interface. The window shown on Figure 3 is displayed to allow the user to log-in. The security and audit trail, discussed above, are enabled by this process. Once the user is logged in, the window shown on Figure

5   5 is displayed. This primary index provides primary information and access to the functions of the system and processes of the preferred embodiment of the present invention, including the Web Site Administration; Web Site Architecture; Content Management; and Workflow tools.

For example, the web site can be configured through the Administrative

10   Tools, shown in the window on Figure 5. The user can, if privileges allow, create New Users for the web site, as shown on Figure 6. Information such as the User Name, Login ID, Password, E-mail, Telephone number can be entered, along with the Workspace for that user and the Role for that user. Additional Workspaces and Roles can be added. Existing users are displayed on the left

15   side of the Administrative Tools Window. The user can also edit existing users to delete, add or change Workspaces or Roles, as shown on Figure 7.

The user can also, if privileges allow, create New Groups. The user can enter Group Names, E-mail, Telephone Number, Description, as well as add or remove Users in the Group. Existing Groups are displayed on the left side of the

20   window, as shown on Figure 8. Existing Groups can also be edited, as shown on Figure 9.

Roles can be created in the Administrative Tools, as shown on Figure 10. The Role name is entered, along with the description of the Role, with the capabilities of that Role, concerning tasks such as Site Map, Workflow, Queries,

25   Statistics, Verification, as shown on Figure 11. These Roles can be edited as well, as shown on Figures 12 and 13.

Workspaces can be also be created in the Administrative Tools window, as shown on Figure 14. The Workspace name can be entered along with the Content Category, Participant Set, the Resource Set and the Workflow Set.

30   Existing Workspaces are displayed on the left side of the window. The Workspaces can be edited as well, as shown on Figure 15.

The Default Settings for the web site can also be set or edited in the Administrative Tools window, as shown on Figure 16. The Layout and Content of the site can be set by dragging and dropping selected modules from the list.

The status of the licensing of the web site can be viewed in the Administrative Tools window, as shown on Figure 17. Also, the audit trail can be set for the web site in the Administrative Tools window, as shown on Figures 17 - 23. The attributes of the audit trail can be set therein.

5   The Architecture of the web site can be configured in the Administrative Tools window, as shown in Figures 24 - 28. The attributes of the web server, the productions server and the testing server can be set in this window for new web servers. Other attributes which can be set include the file structure mapping, the MIME types which are supported, new categories for web elements or resources,
10   and the default sitemap settings.

The Content Management attributes are also set in the Administrative Tools window, as shown in Figures 29 - 33. The Field labels and Field type can be set, the Departments, the Kill Dates, Owner are also set. The Archive Content for each item can be set as well as the Content Deletion for items. Batch
15   Upload/Check-in attributes for the items can be set as well.

Workflow attributes can be also be set in the Administrative Tools window, as shown on Figures 34 - 38. These attributes include Create New Participant Sets. The Participant Set is defined along with the Participant Labels. New Resource Sets can also be created, as shown on Figure 36. New Workflow
20   Sets are also created as well. Existing Participant Sets, Resource Sets and Workflow Sets can also be edited. Workflow Templates can also be installed in the Administrative Tools window, as shown on Figure 38.

The primary index window shown on Figure 5 also provides access to the different functions of the system. Clicking on the Site Map button on the upper
25   left hand side of this window displays the graphical representation of the site map of the system, as shown on Figure 40. Information on the elements displayed on this site map can be retrieved by clicking on the appropriate element. Other views can be displayed by clicking on the appropriate button on the toolbar. The settings are displayed in the windows on the toolbar. These settings can be
30   altered by clicking on the settings button on the right hand side of the window. This displays the sitemap settings window, shown on Figure 39.

A workflow can be created by clicking on the Workflow Designer button on the primary index display. The Workflow Designer is displayed, as shown on Figure 41. Clicking on the appropriate button causes the Workflow properties

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dialog box to be displayed, as shown on Figure 41. Data can be entered there to set the properties of that workflow. The Workstep properties for that element of the workflow is then entered into the dialog box shown on Figures 42.

Once the workflow has been designed, the workflow can be initiated by
5   clicking the Workflow Initiation button on the primary index display. Step 1 of the Initiate Workflow process is displayed, as shown on Figure 45, defining the workflow name and assigning a workflow template to it. The Step 2 is then displayed as shown on Figure 46. The users for each role are defined therein. Step 3 of the process is displayed on Figure 47, scheduling the start conditions.
10   The individual tasks are then assigned on Step 4 shown on Figure 48. The workflow is then set up and scheduled.

The content of the web site can be managed through the Content Management applications, which can be accessed by clicking on the Content management button. The screen shown on Figure 49 is displayed which shows
15   the saved queries by name, description, last run and asset count. Saved queries can be selected to run or to edit. New Assets can be checked in at this time by clicking on the New Asset button on the toolbar. The Add New Asset Step 1 window is displayed, as shown on Figure 50. The file path for that New Asset can be entered or selected by Browsing.

20   New Queries can also be created by selecting the New Query button on Figure 51. The New Query window is then displayed as shown on Figure 51. The new Query is created by entering a name, description, and conditions. The Query can then be saved or saved and then run. Existing Queries can be edited by selecting the Edit Query button on Figure 44 after selecting a Saved Asset.
25   The Edit Query window is then displayed as shown on Figure 52. The conditions can then be edited.

The results of a run Query is displayed, such as in the example shown on Figure 53. The Name, linkage, Creator, last modification date, type and size of the assets retrieved are displayed. The attributes of an asset can viewed by
30   clicking on a saved asset, as shown on 54.

Clicking on the Site Publishing button from the primary index displays the Site Publishing window as shown on Figure 55. The page set, destination, schedule for publishing and log can be selected from there. Clicking on the Schedule button, as shown on Figure 56, sets the schedule for the publishing.

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The site publication can be verified by clicking on the Verification button on the primary index display. The results of the verification are then displayed, such as shown on Figure 57. Missing and orphaned elements are then displayed.

Notification of conditional occurrences can be set by clicking on the Notification button on the primary index. As shown on Figures 58 and 59, the user can select Task or Messages for notification purposes.

The settings for the interface can also be set from the primary index by selecting the Settings button. Layout & Content and Fonts & Colors can be edited, as shown on Figure 60. The Help menu can be accessed by clicking on the Help button on the primary index.

The Task List is shown in the window in upper portion of the primary index. The settings for the Task List can be altered by the Task List Settings display, Figure 62, accessed by clicking on the Settings button adjacent the Task List. The Help menu for the Task List is also accessible by the Help button adjacent thereto.

Status of the Tasks, such as Create New User, from the Workflows, can be viewed in the Task List. Information about the Tasks can be viewed by clicking on a Task.

The Workflow Monitor area of the primary index displays information on Workflows designed. The status of the Workflow is displayed therein. Clicking on the History button displays information on the Workflow History, shown on Figure. Graphs of the Workflow can be displayed as well. The settings for the Workflow Monitor can be edited by clicking on the adjacent settings button to display the Workflow Monitor Settings shown on Figure 63 - 68.

The Site Statistics can be monitored in the center area of the primary index. As discussed in the above descriptions, the Site Statistics include information on the user's web site statistics, the top IP addresses visited, and the top pages visited. The settings for the Statistics can be edited by selecting the settings button, displaying the screen shown on Figure 69 - 70. New Statistics Sets can be added to the display, as shown on Figure 70.

Once the session is finished, the Log Out button is clicked, and the log out screen is displayed as shown on Figure 71.

The above descriptive embodiments are provided for explanatory purposes and are not meant to limit the appended claims.

40

Claims

We claim:

5   1.   A system for creation and management of web sites, said system

comprising:

a module for creating the visual construction of a web site structure;

a module for maintaining the technical details of a web site;

a module for creating the content of a web site; and

10   a module for collaboratively managing a web site through a plurality of

users.

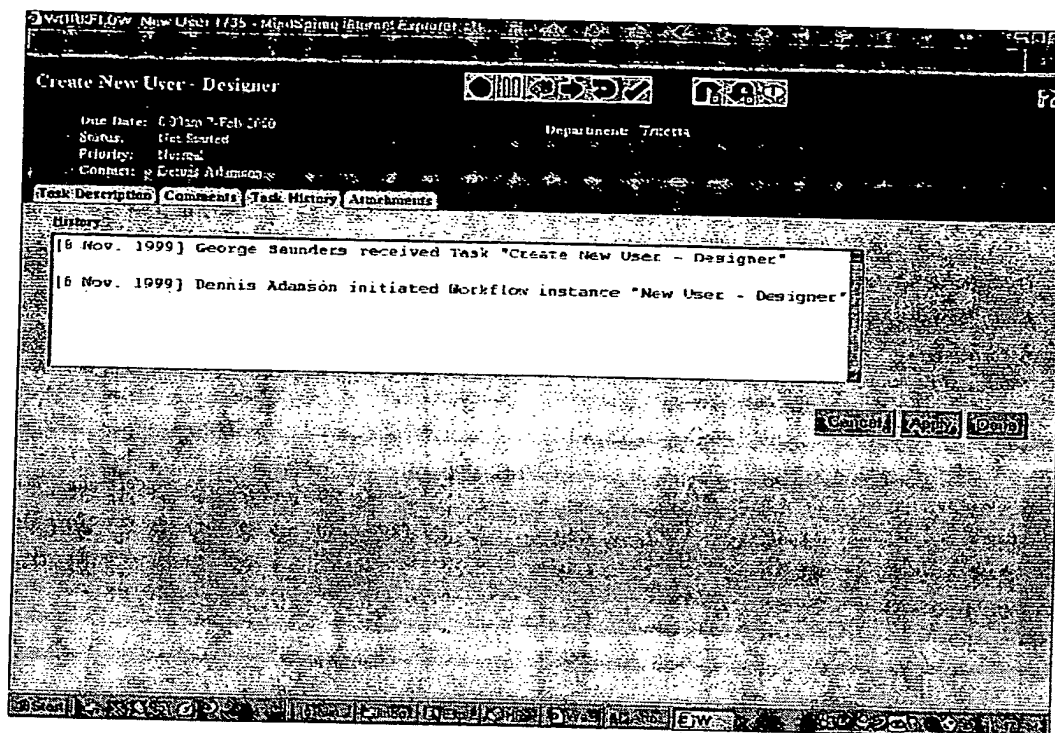**Figure 1**

Figure 2

Figure 3

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9
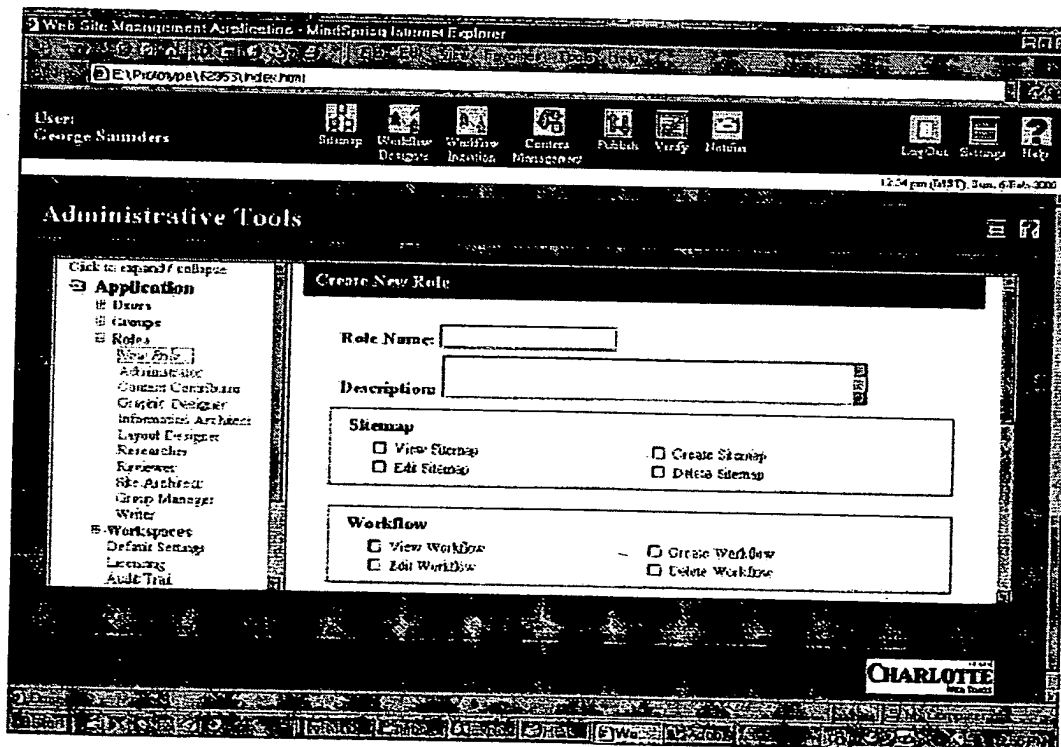
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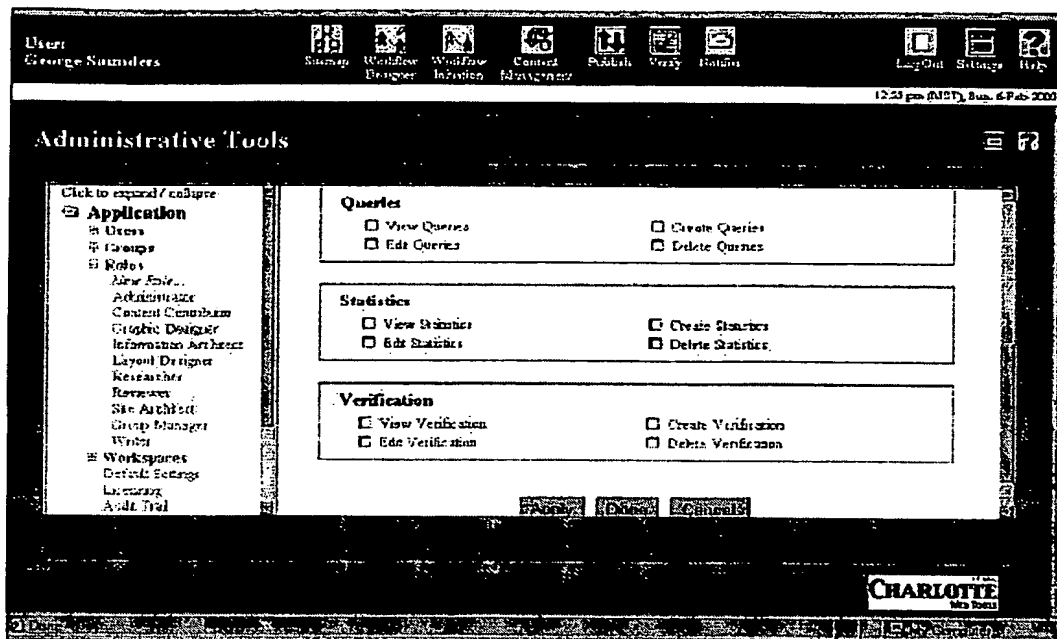
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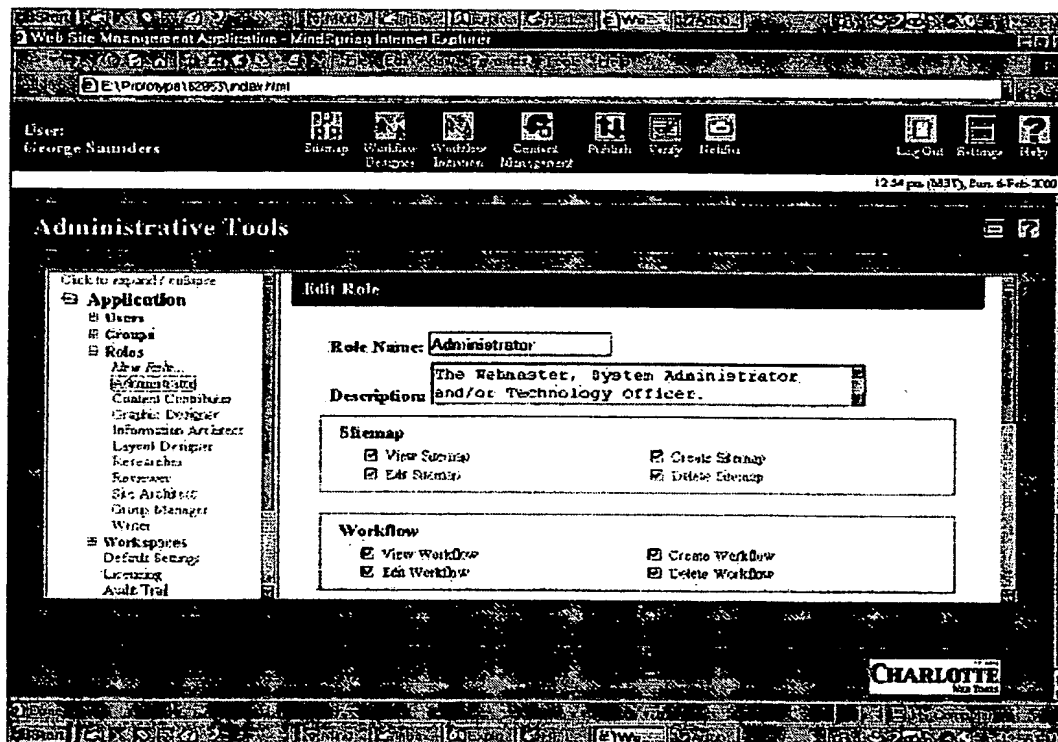
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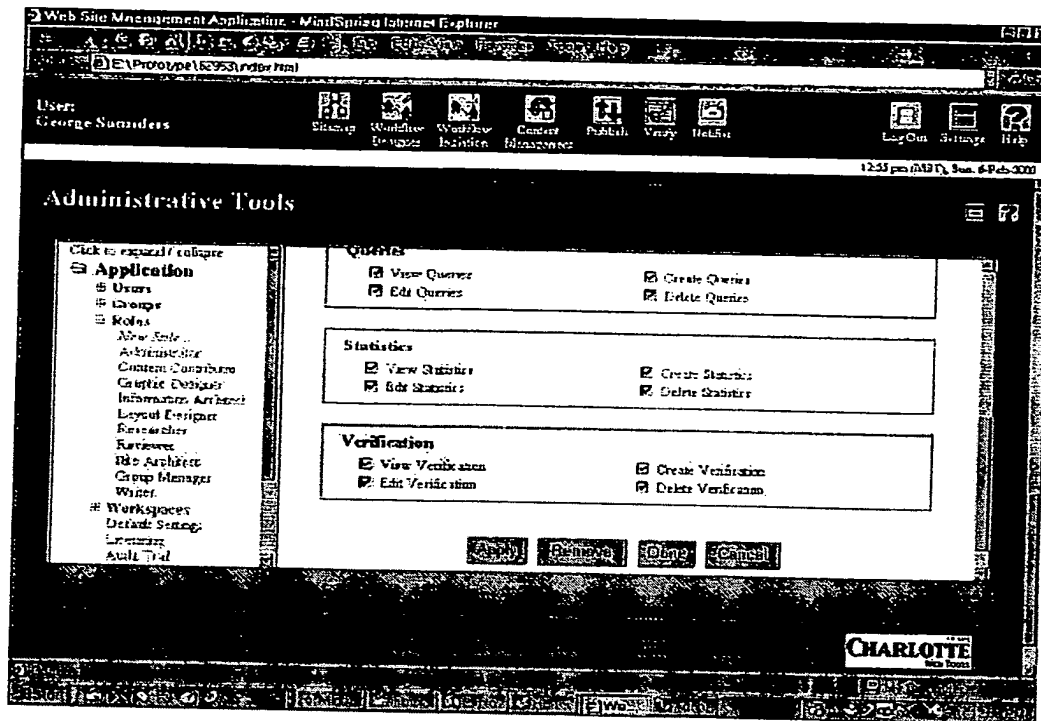
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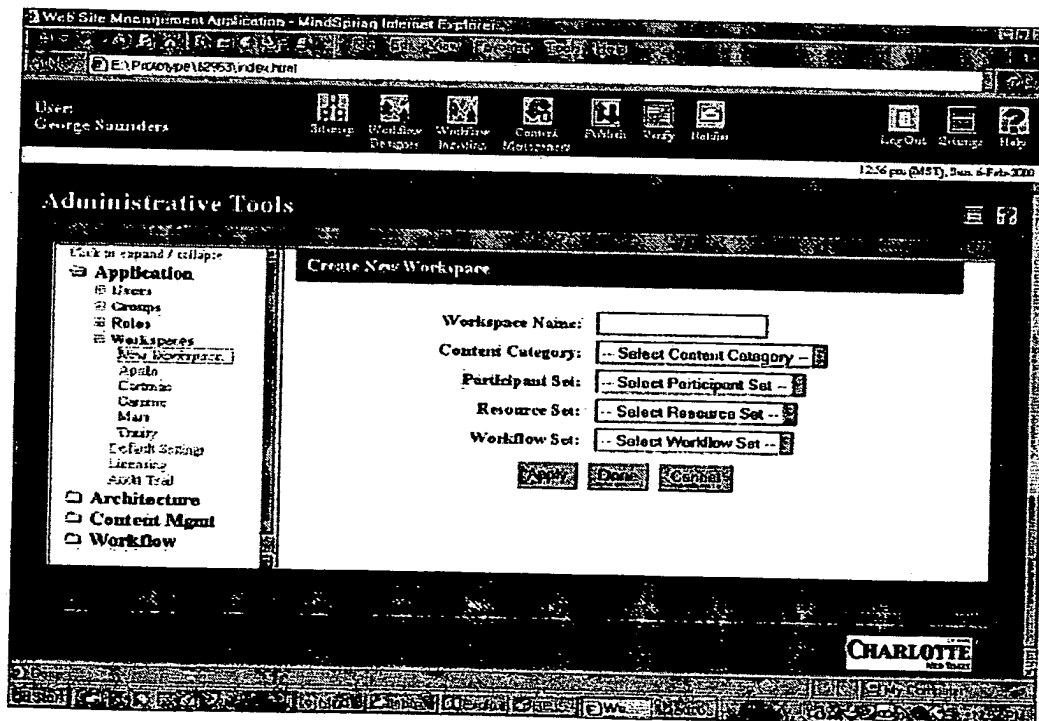
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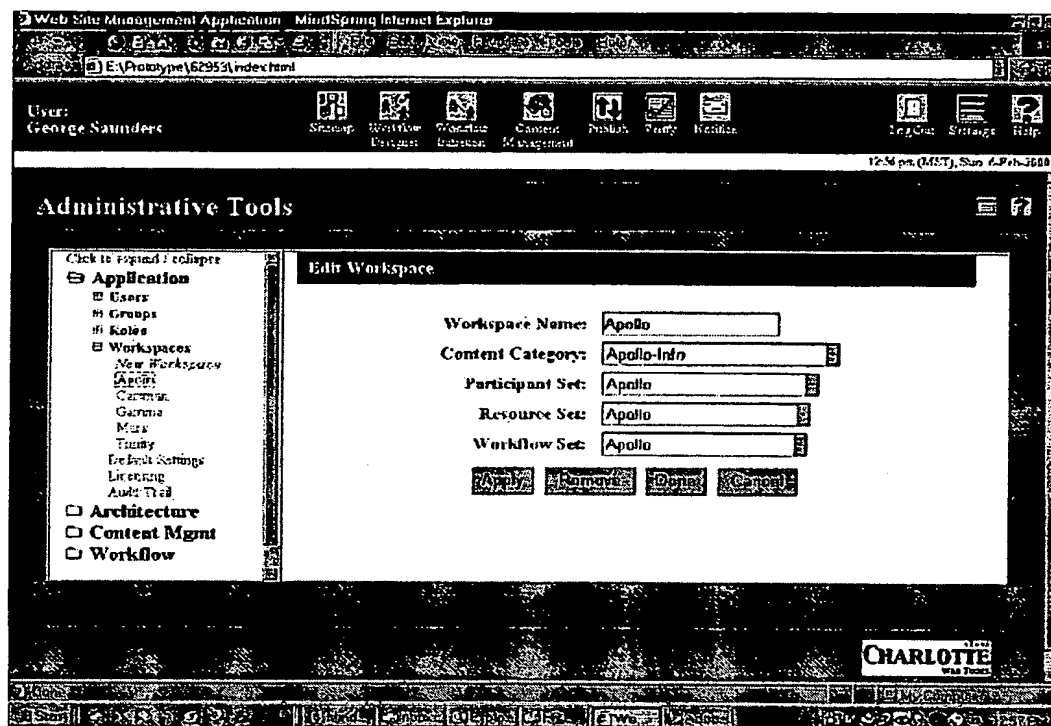
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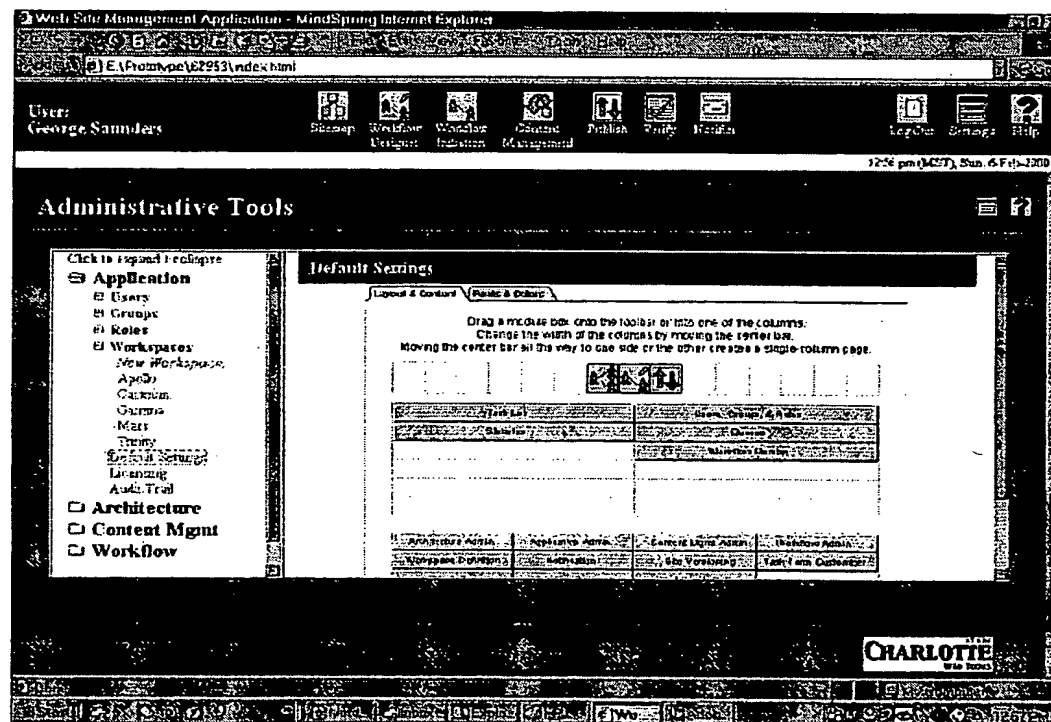
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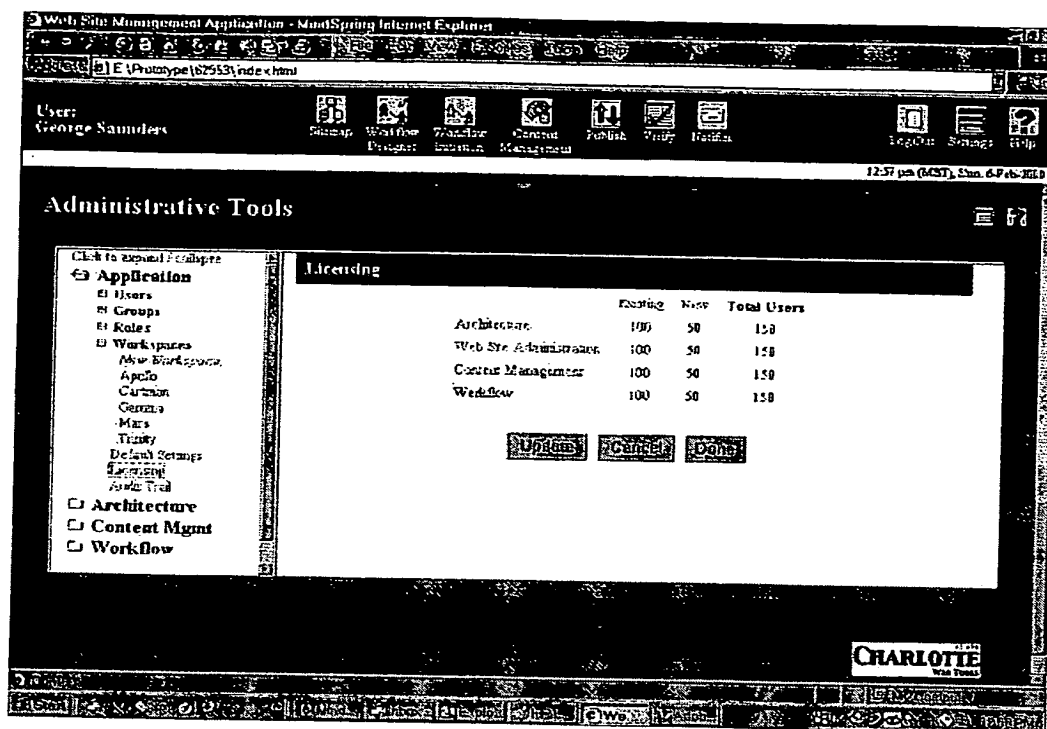
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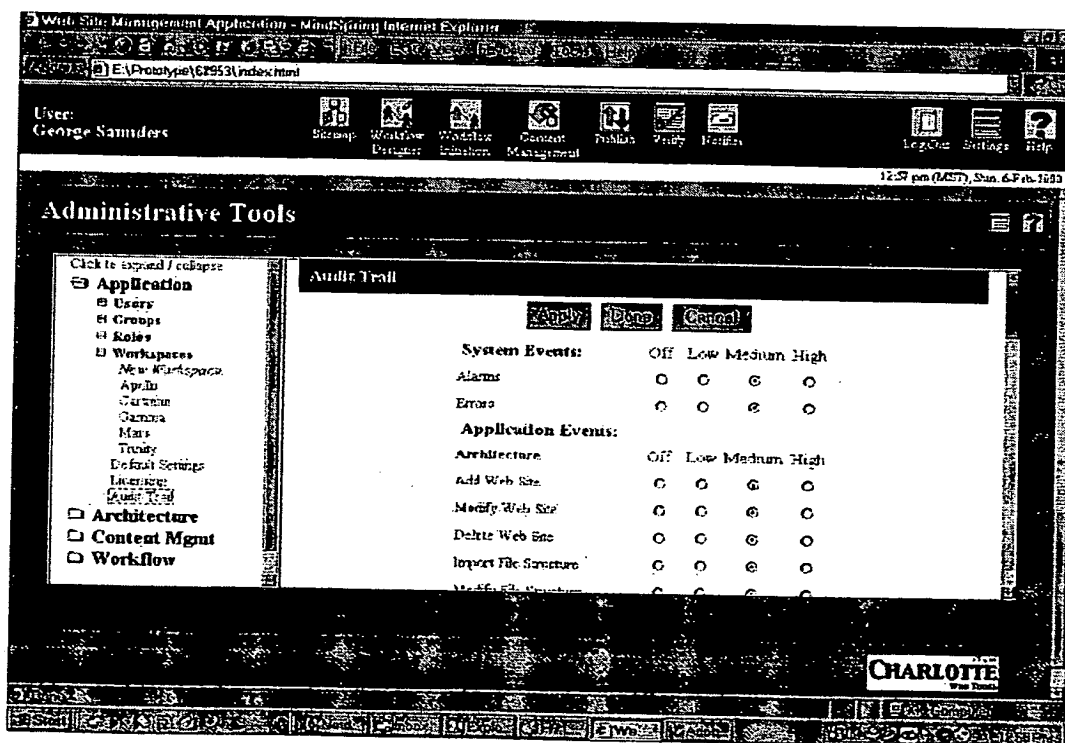
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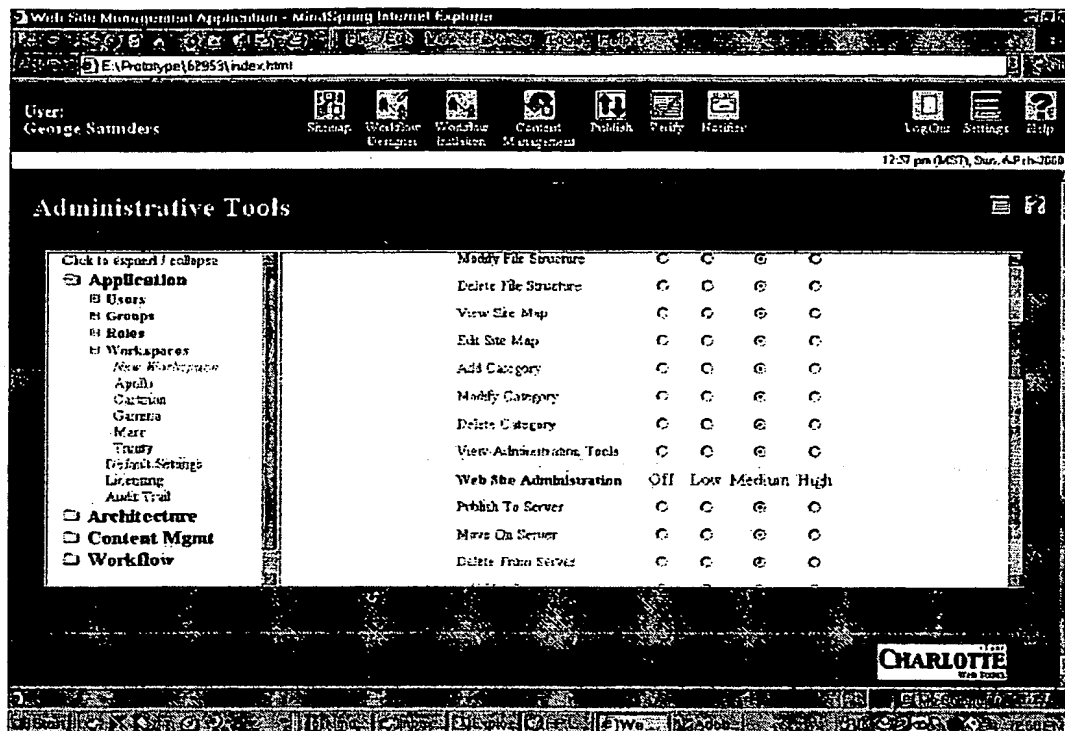
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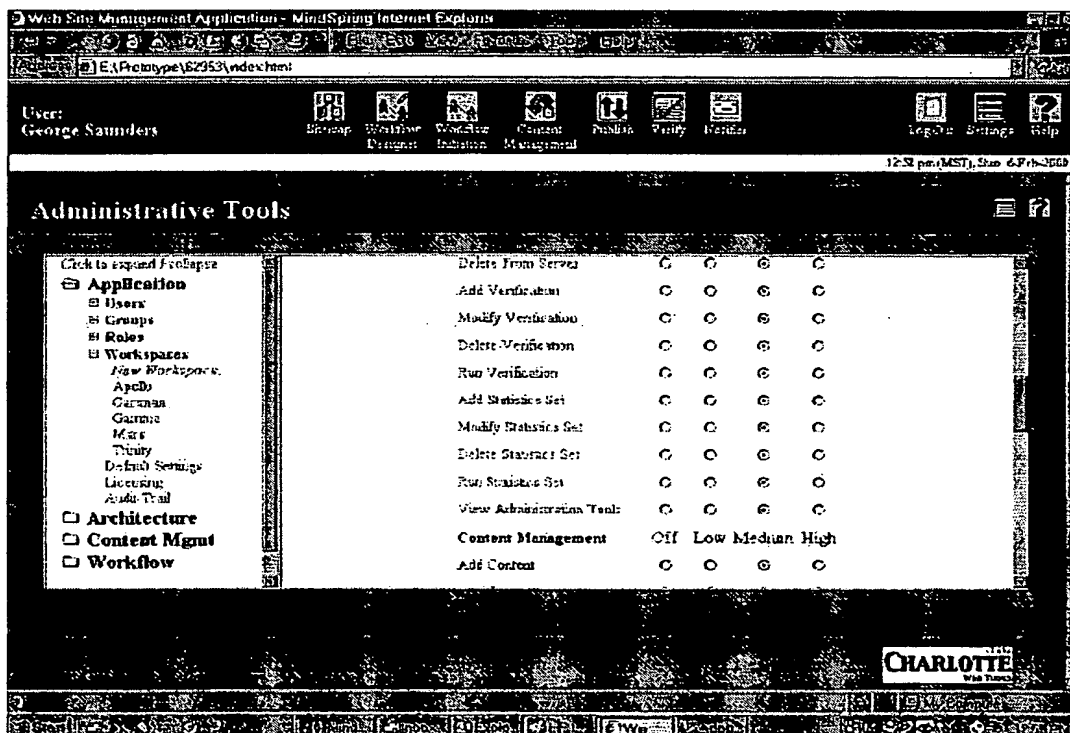
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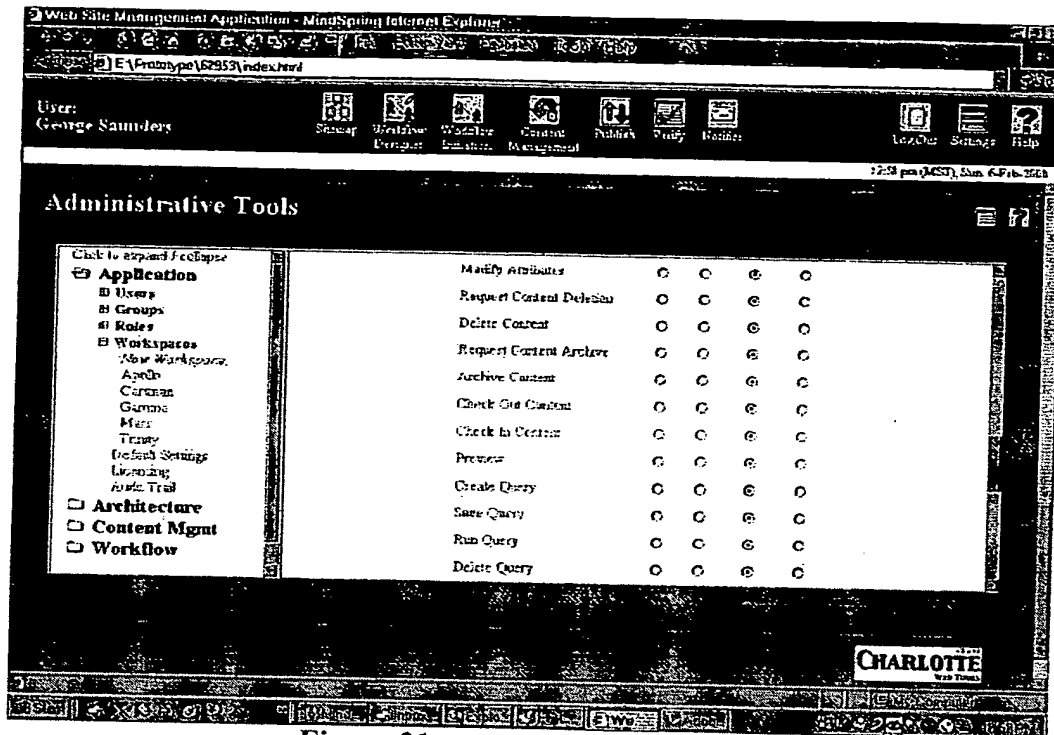
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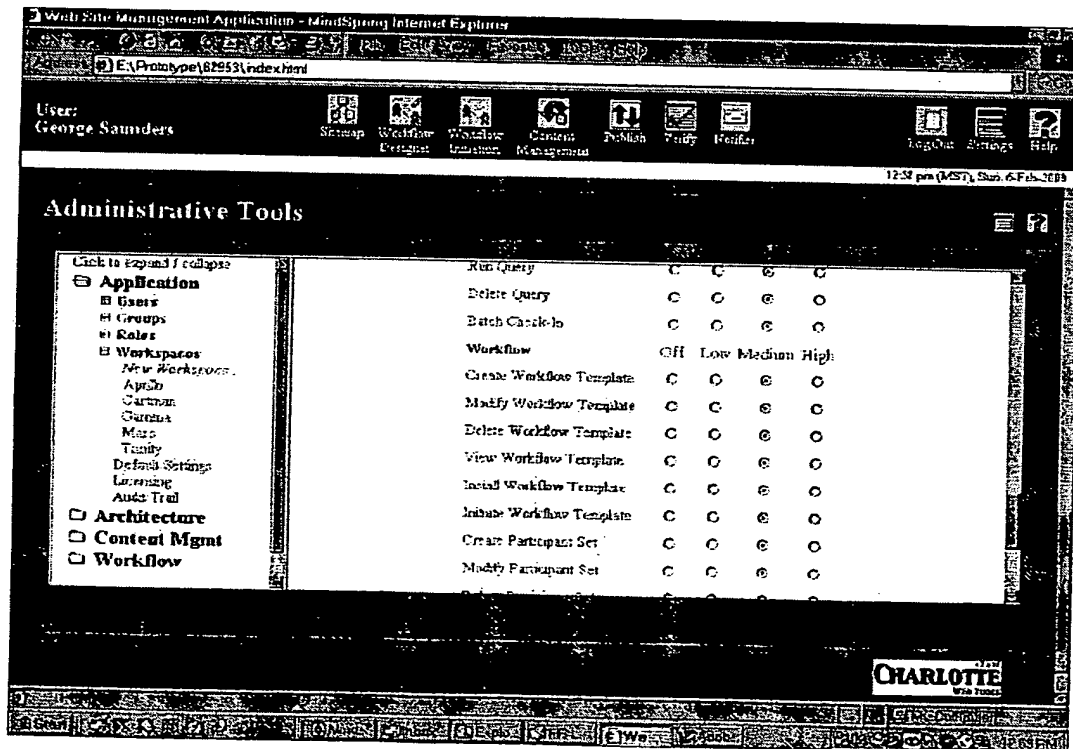
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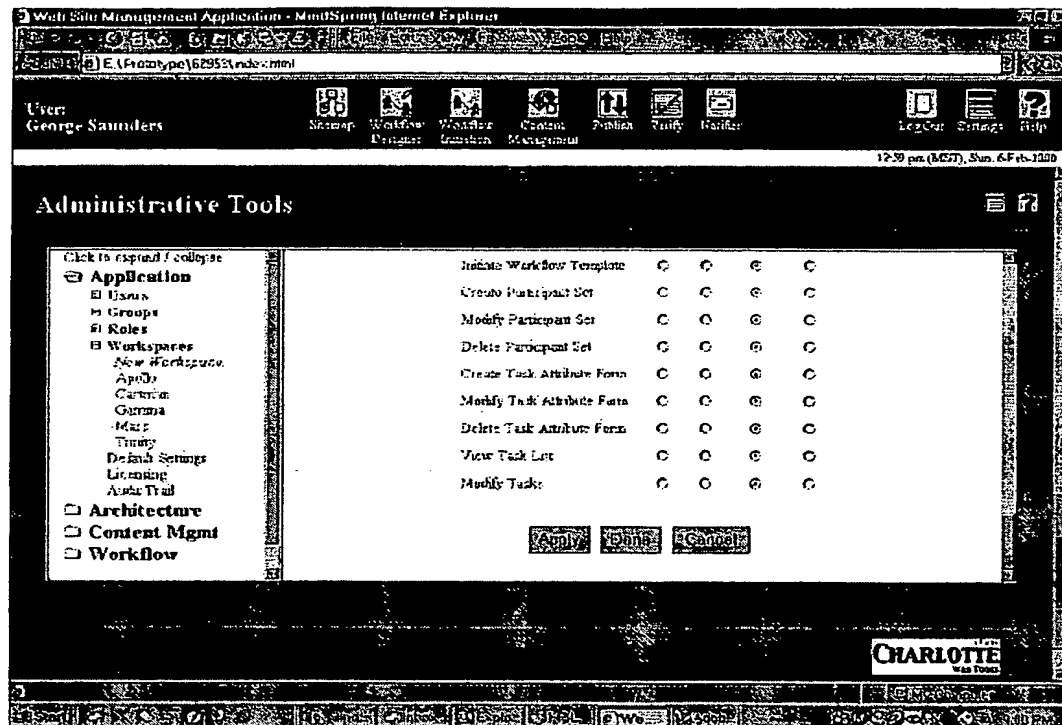
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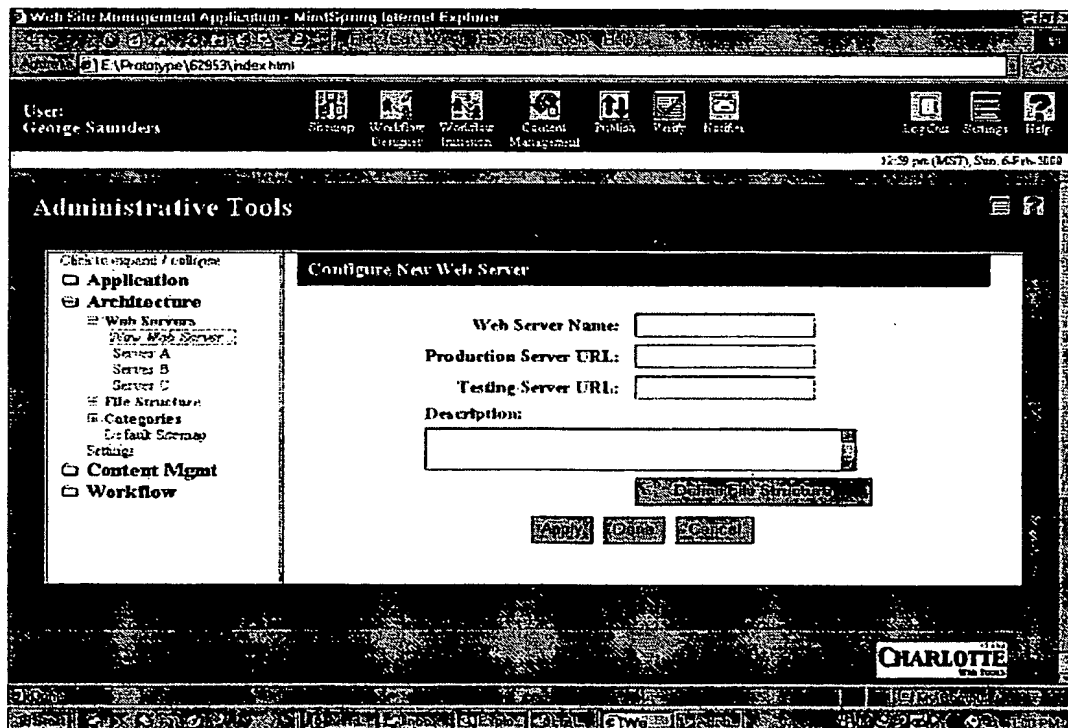
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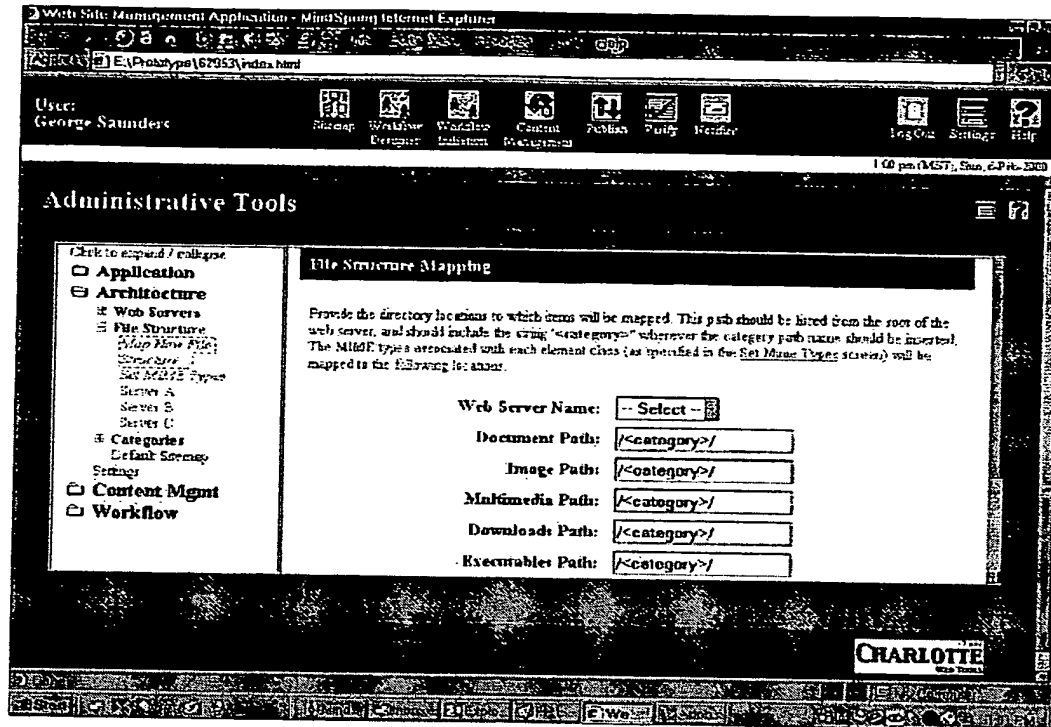
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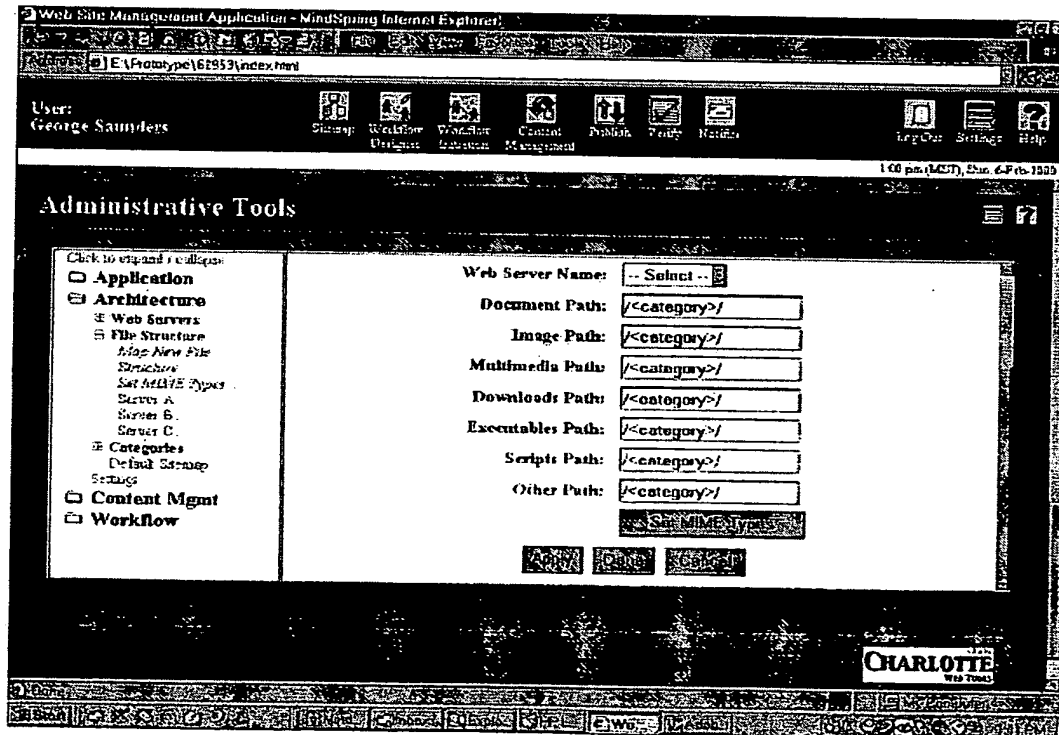
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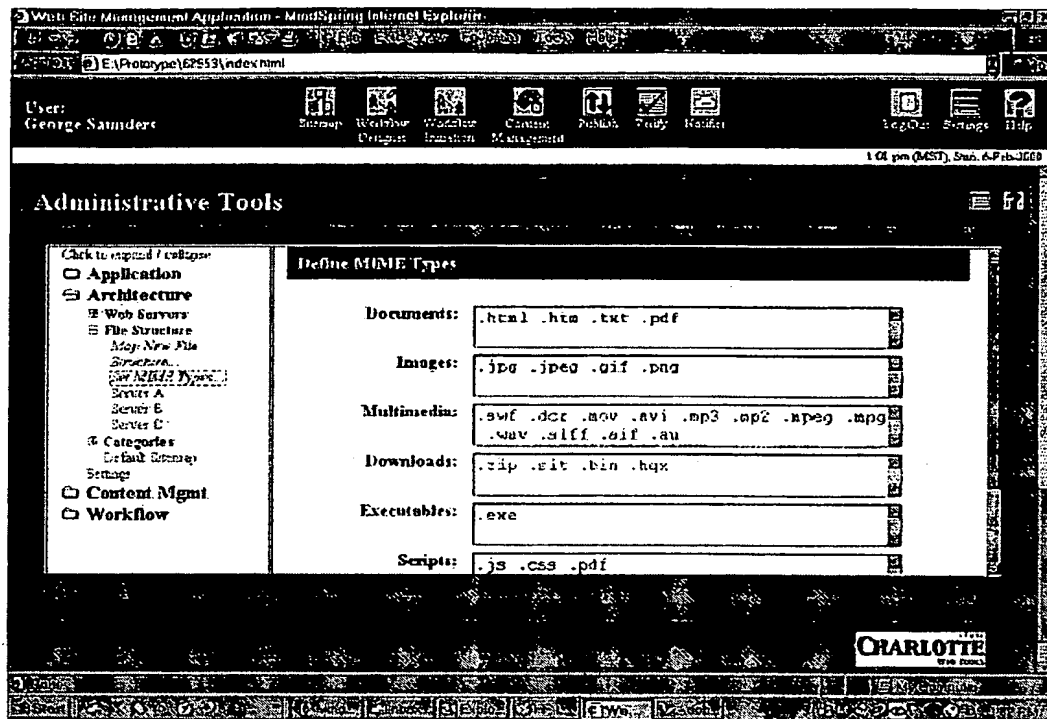
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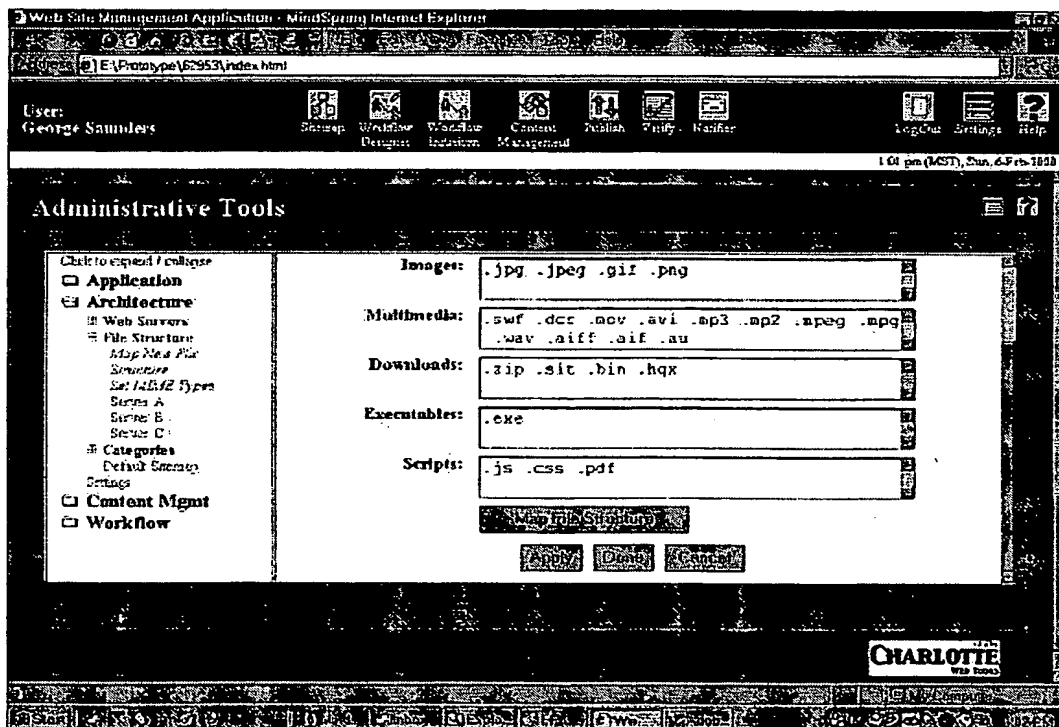
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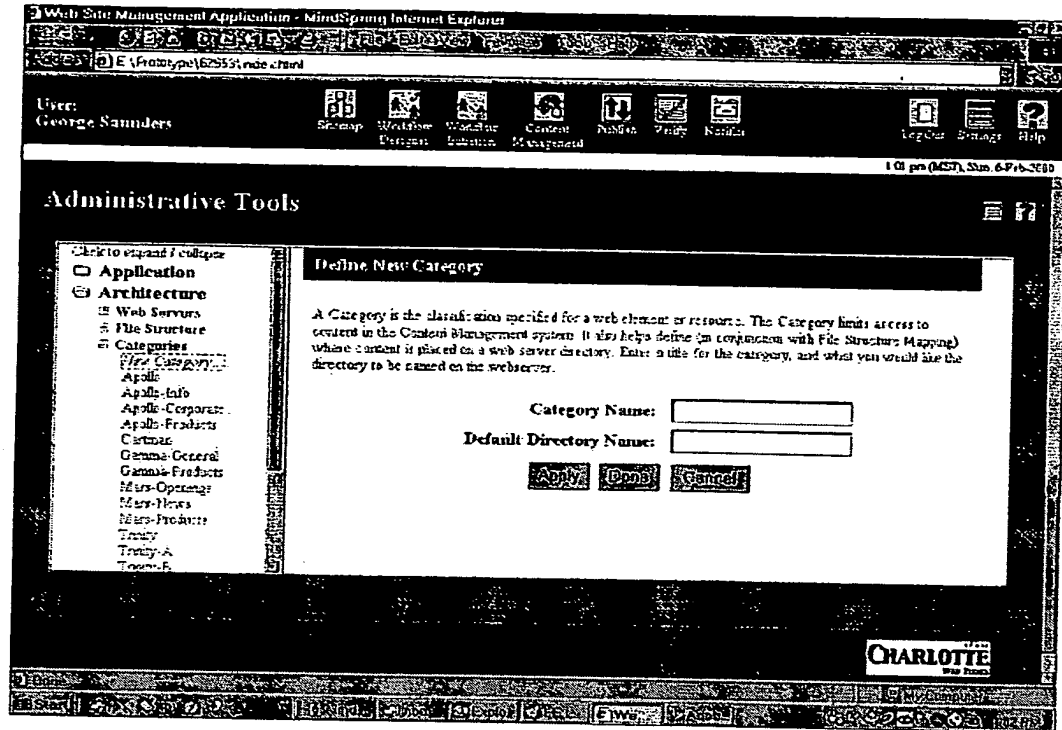
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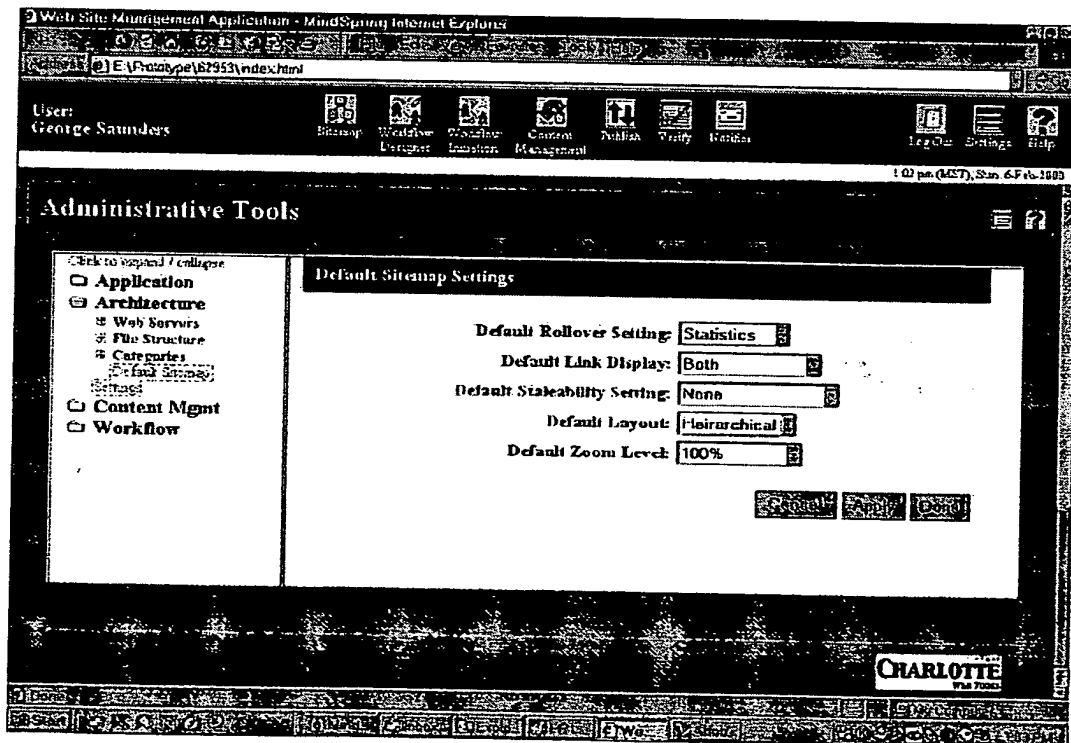
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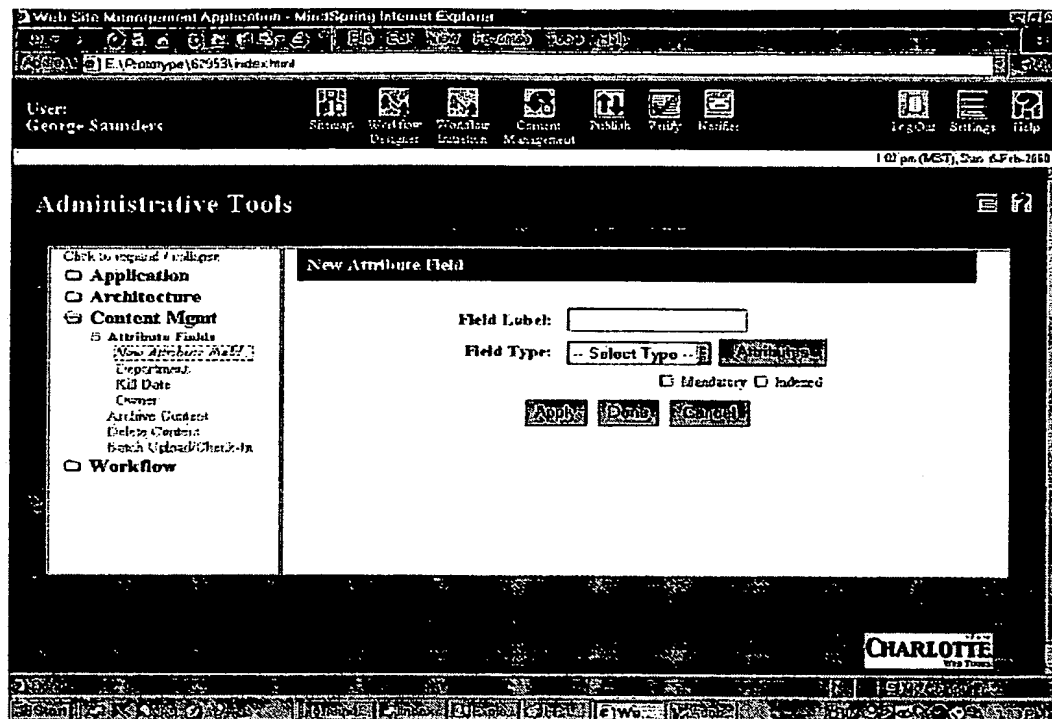
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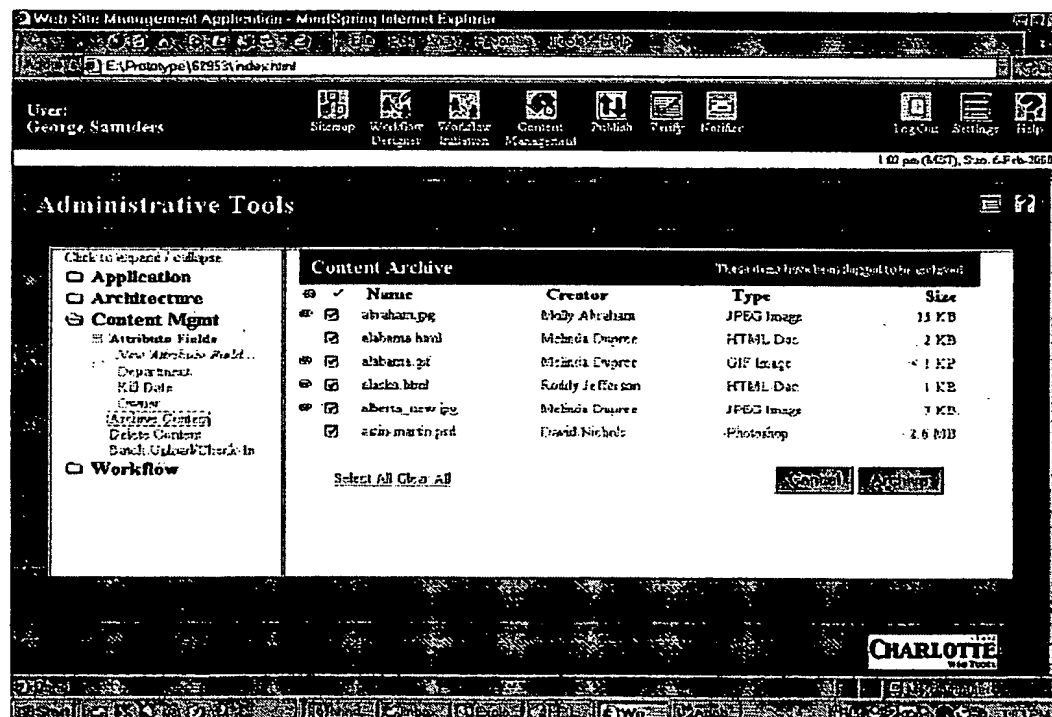
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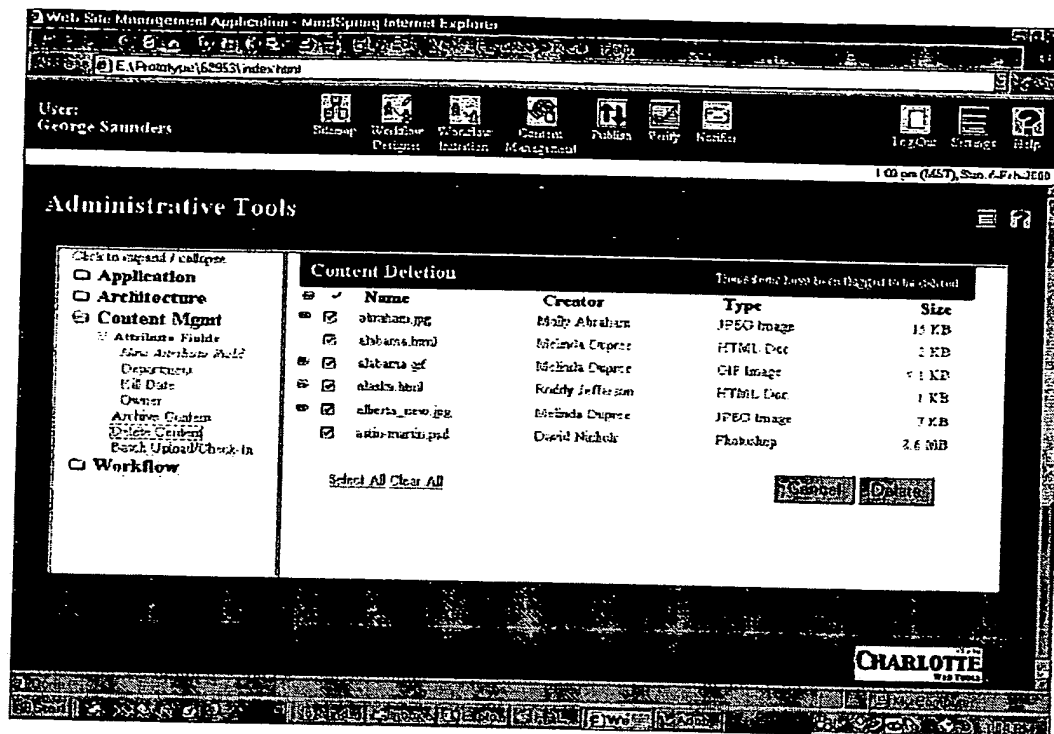
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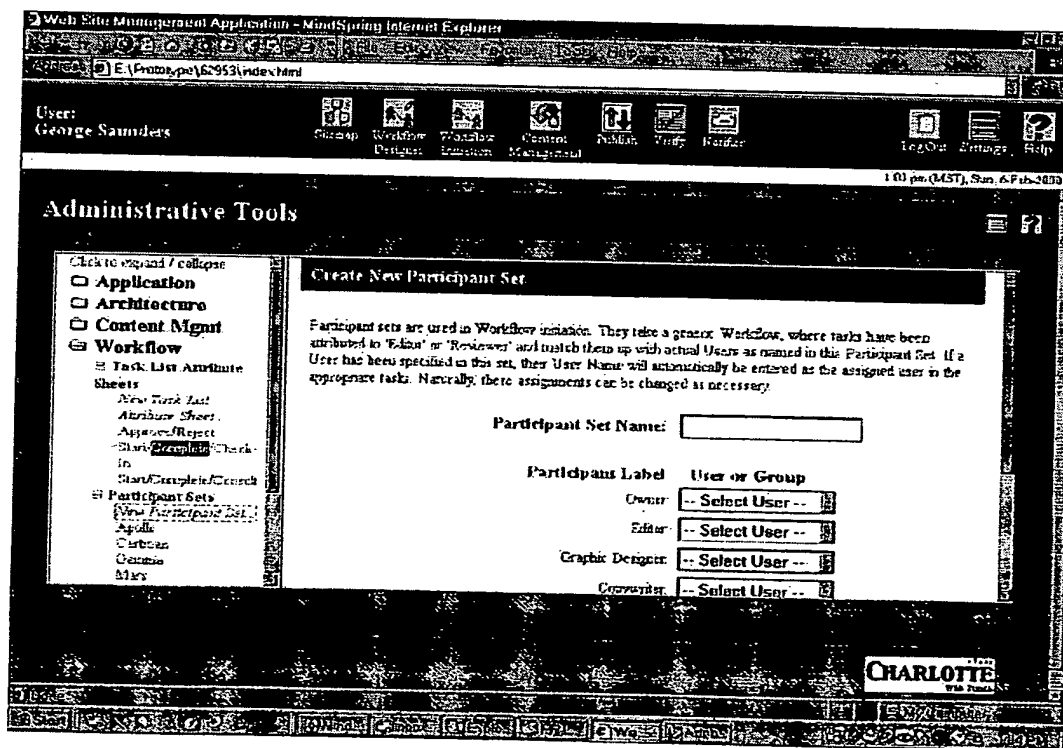
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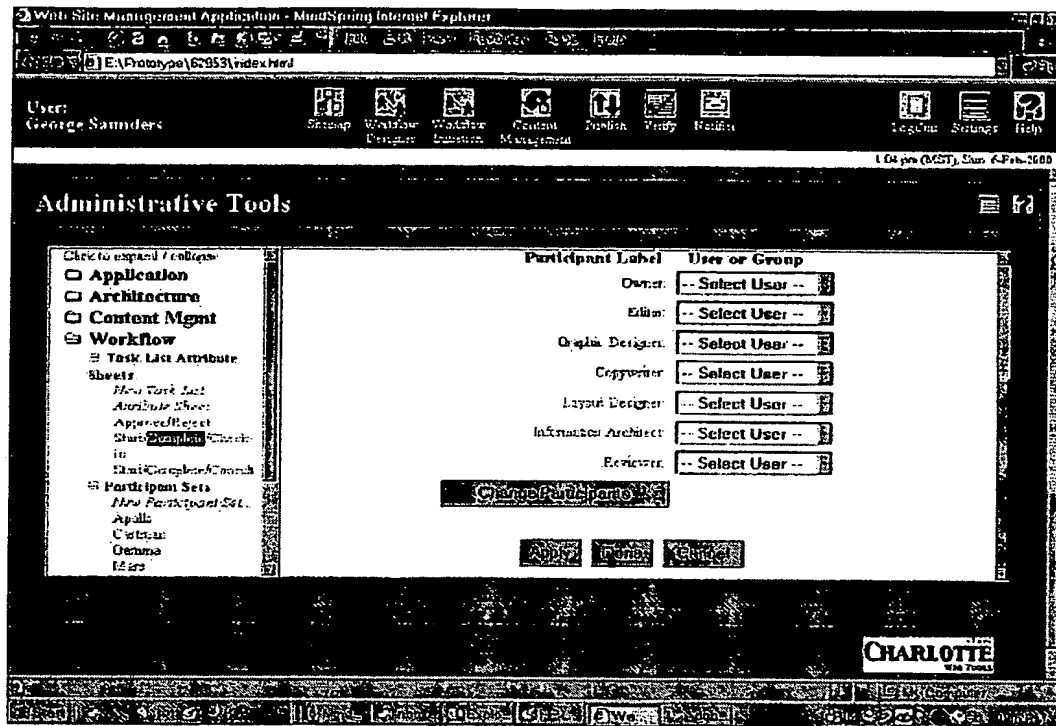
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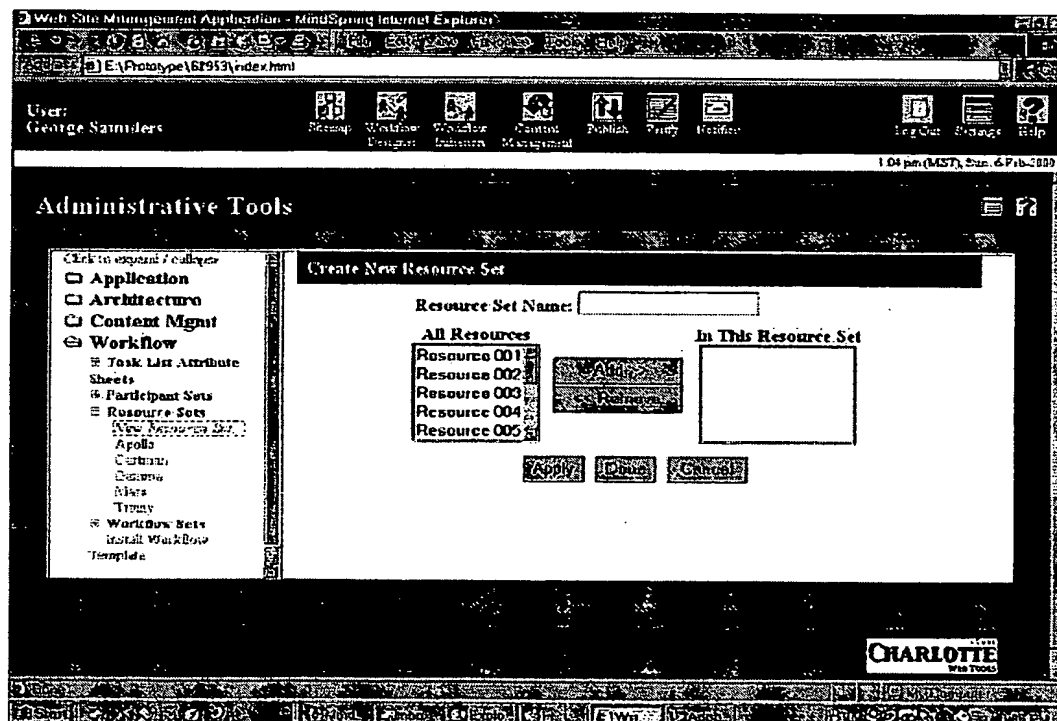
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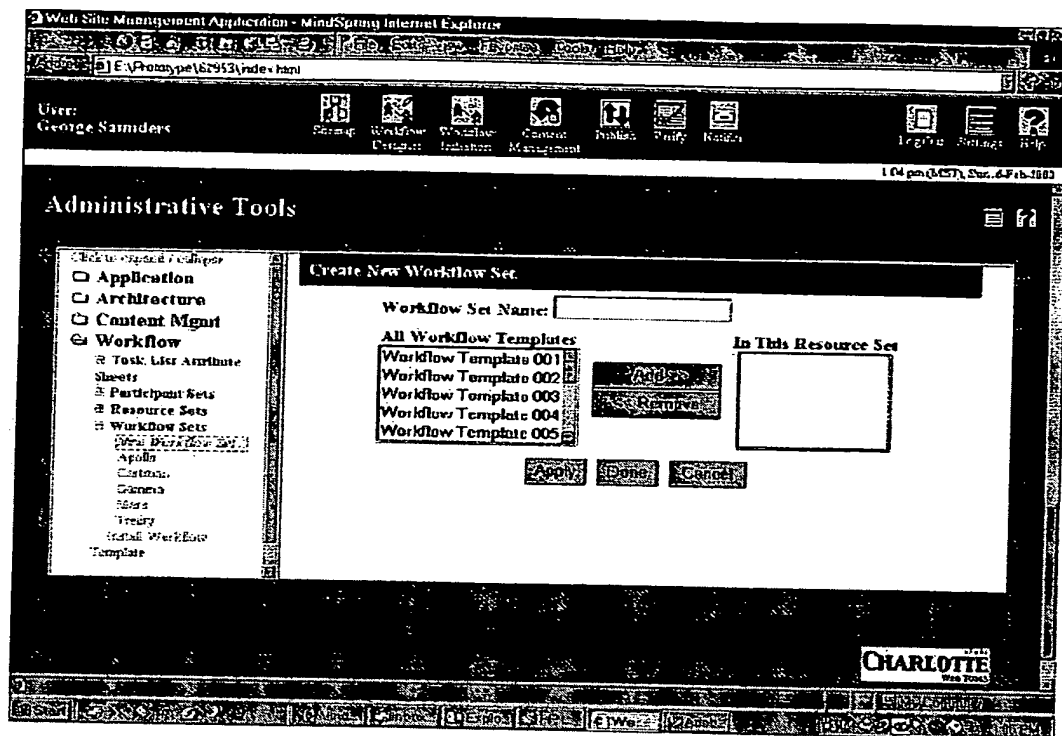
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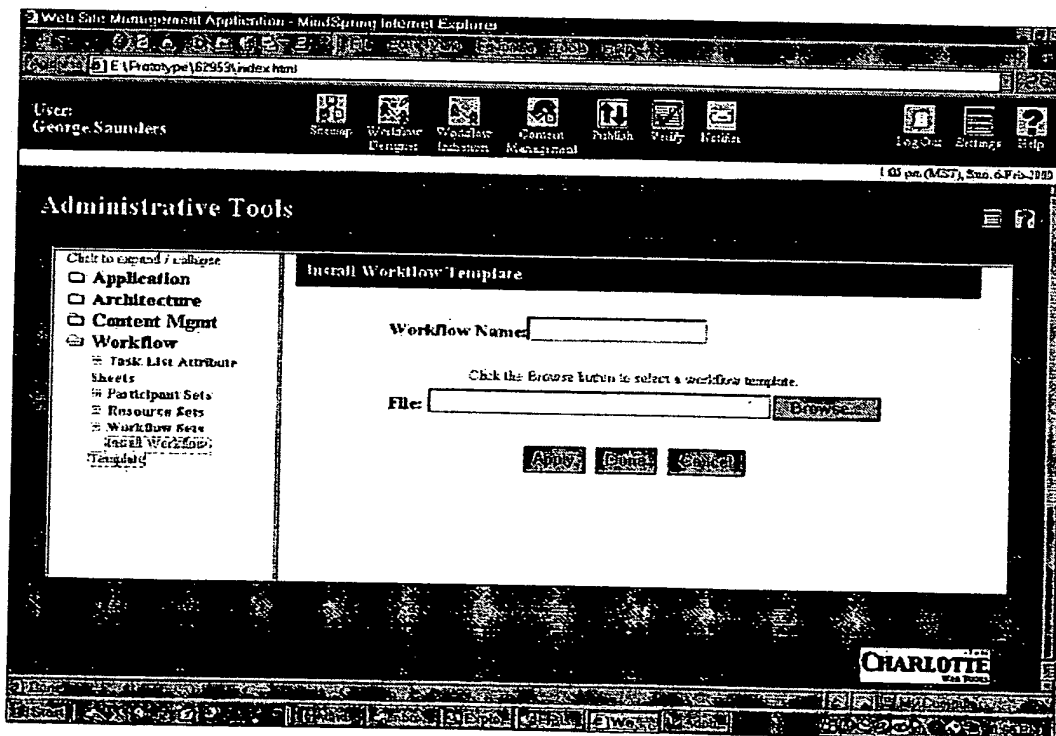
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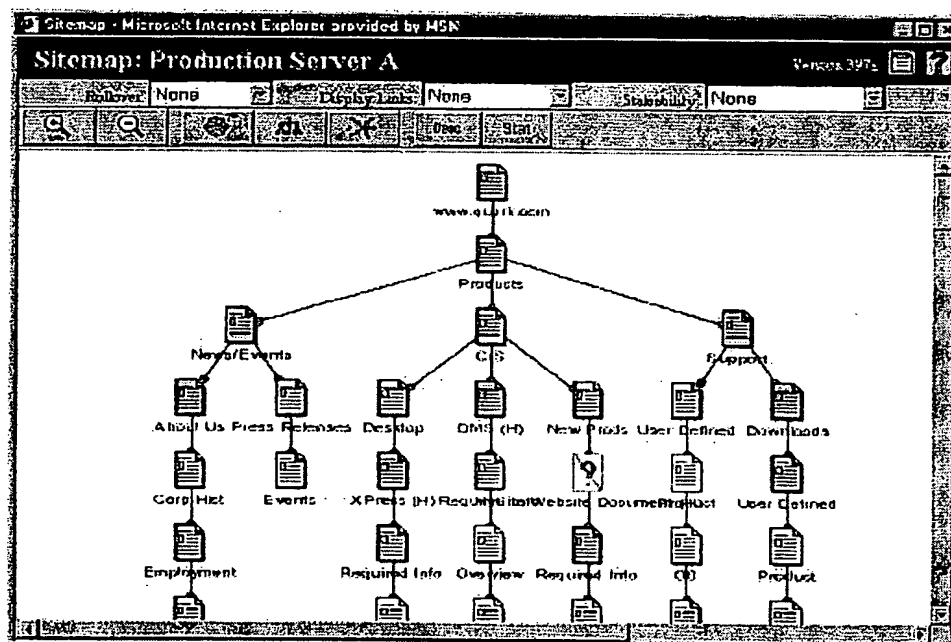
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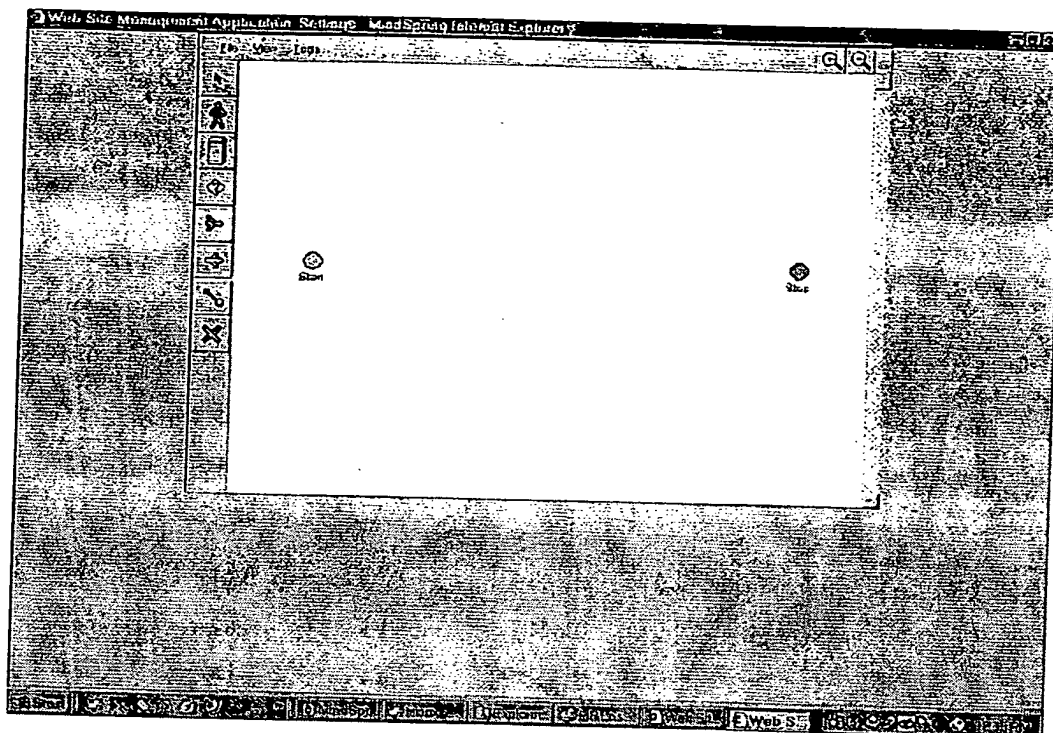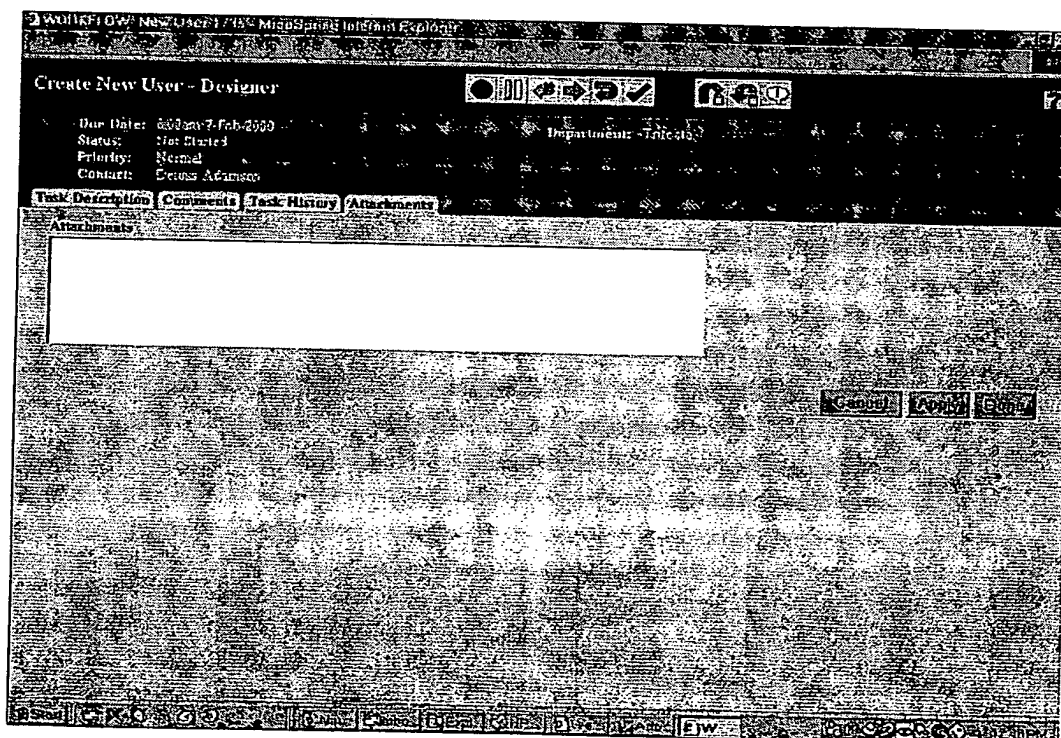
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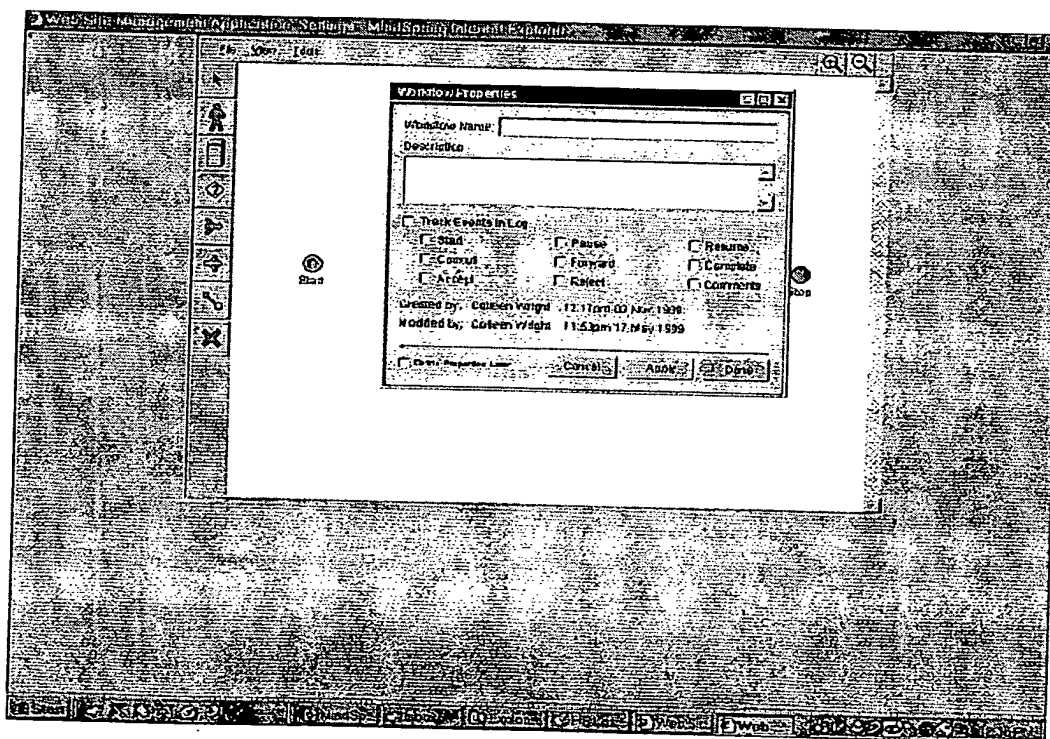
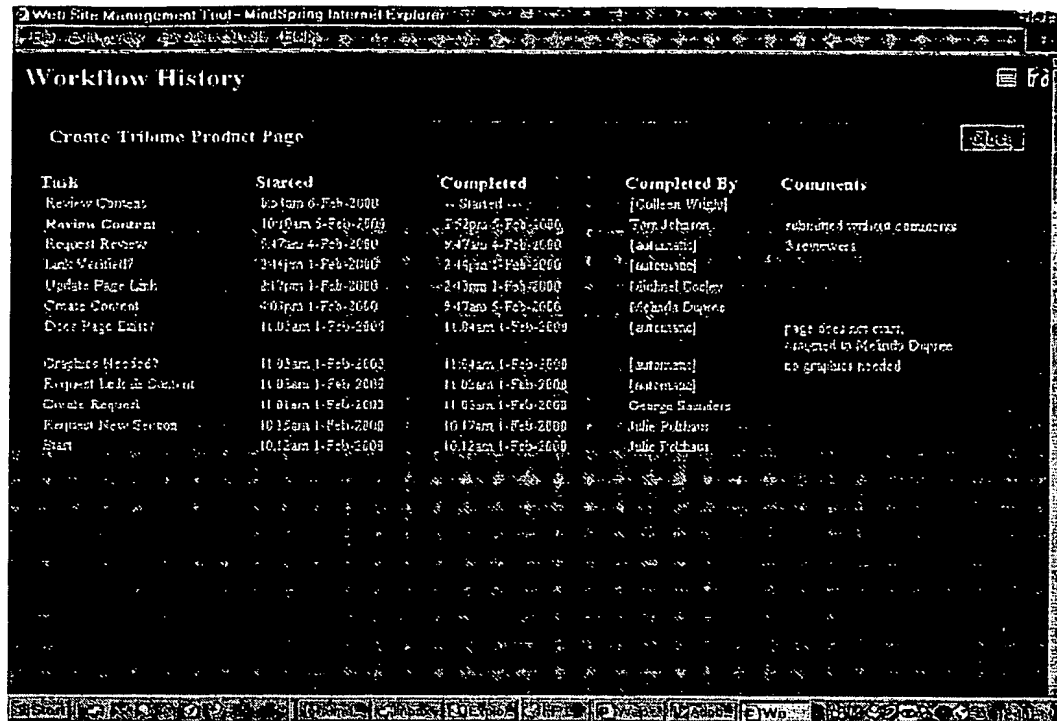Figure 42

Figure 43

Figure 44

Figure 45

Figure 46

Figure 47

Figure 48

Figure 49

Figure 50

Figure 51

Figure 52

Figure 53

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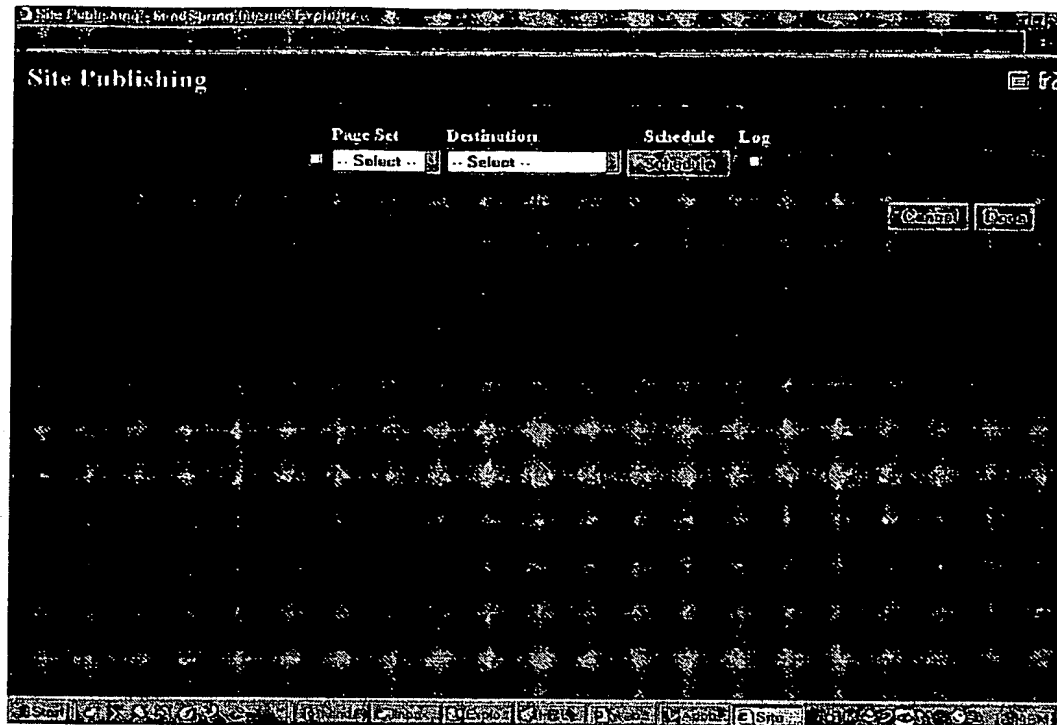
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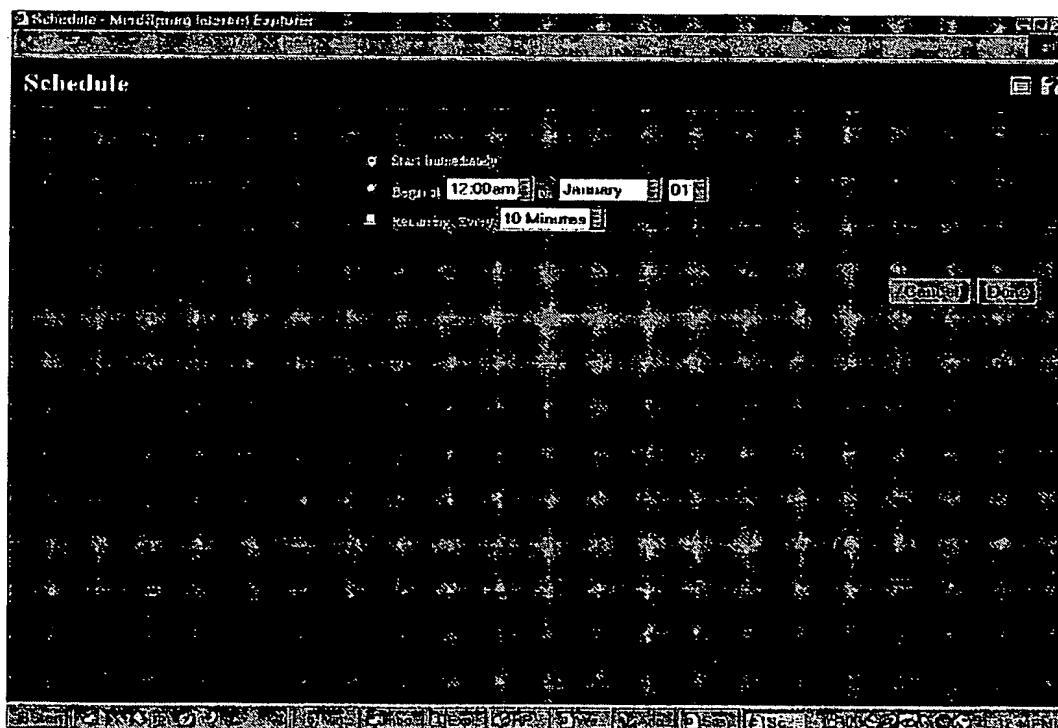
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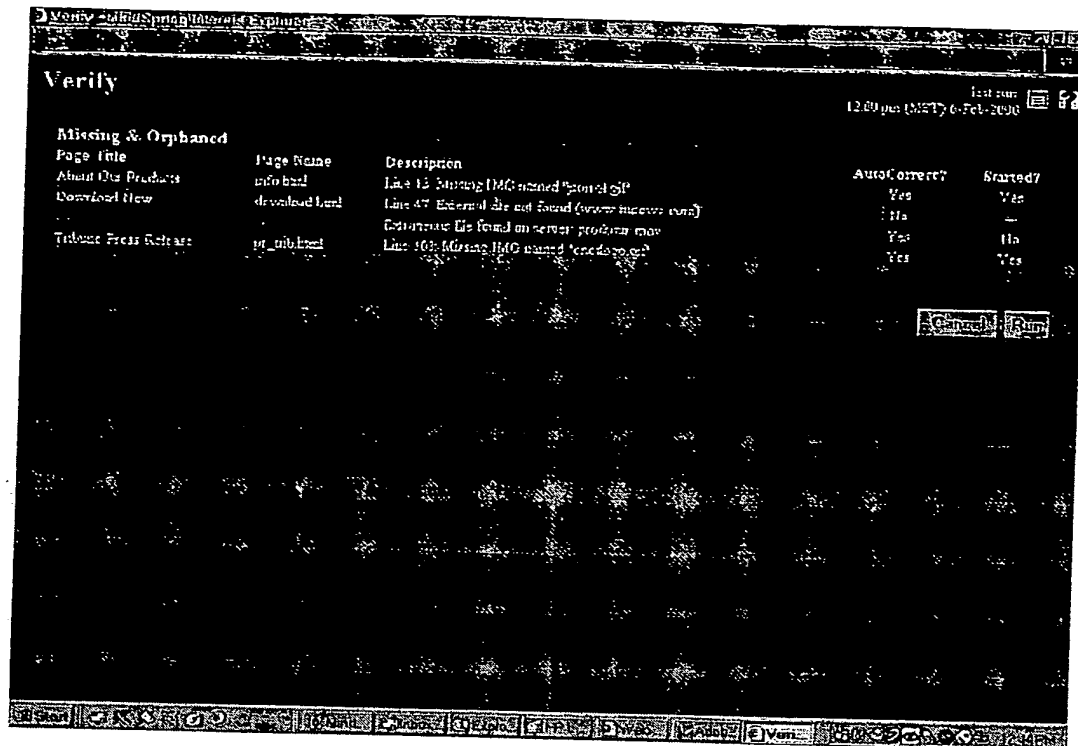
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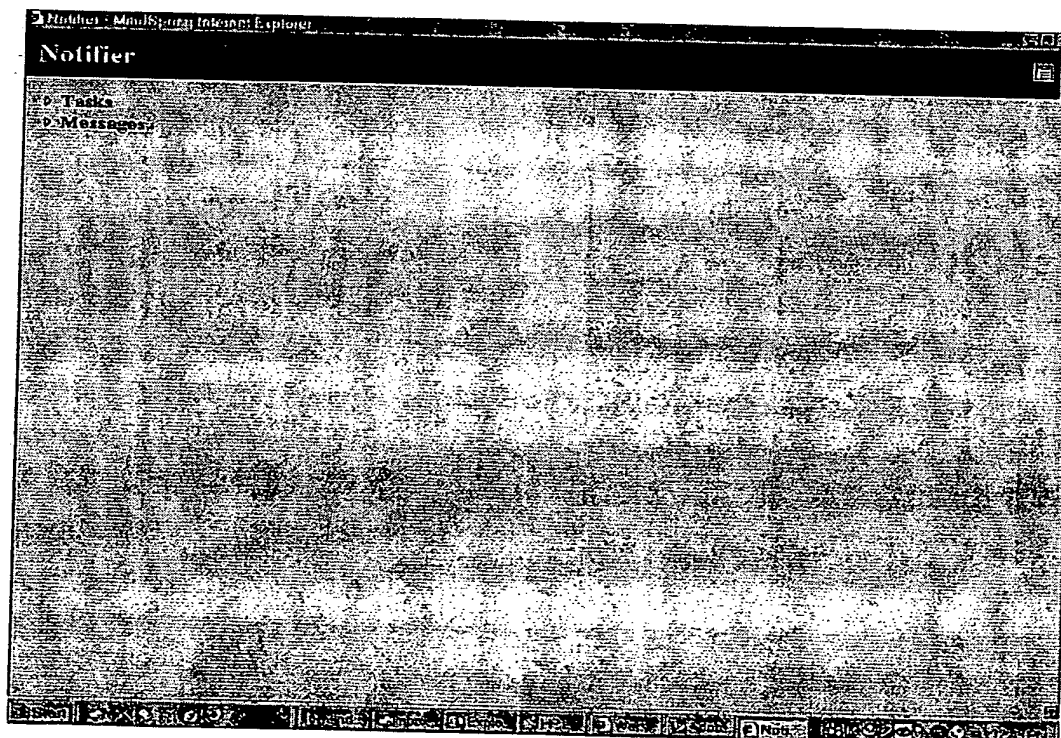
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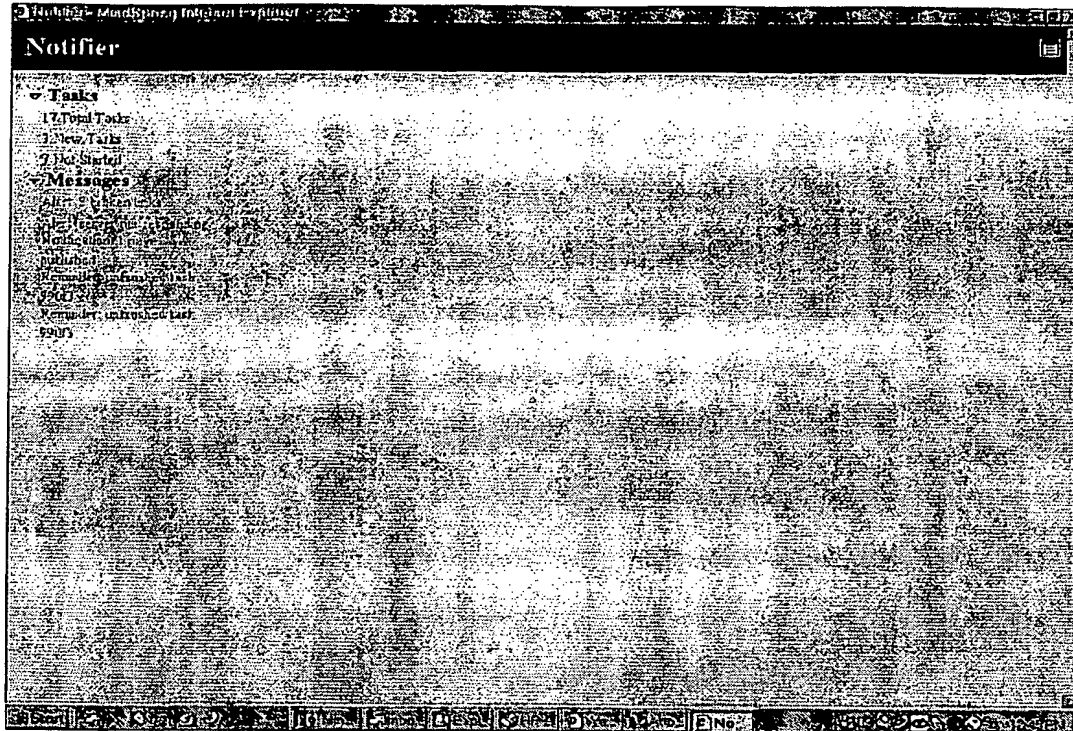
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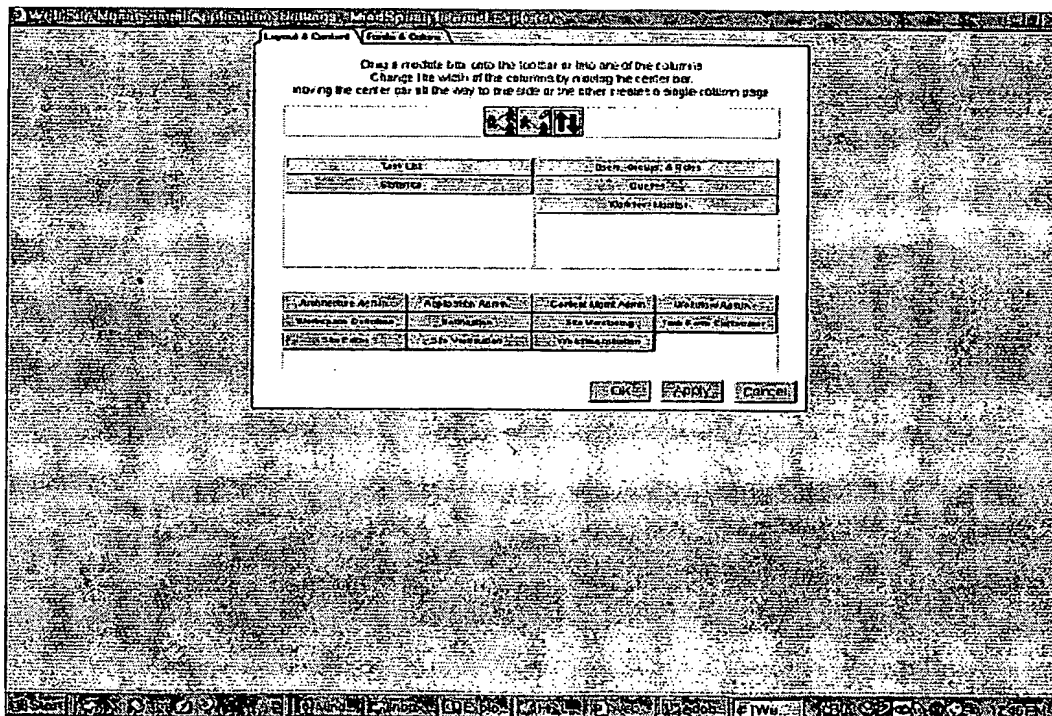
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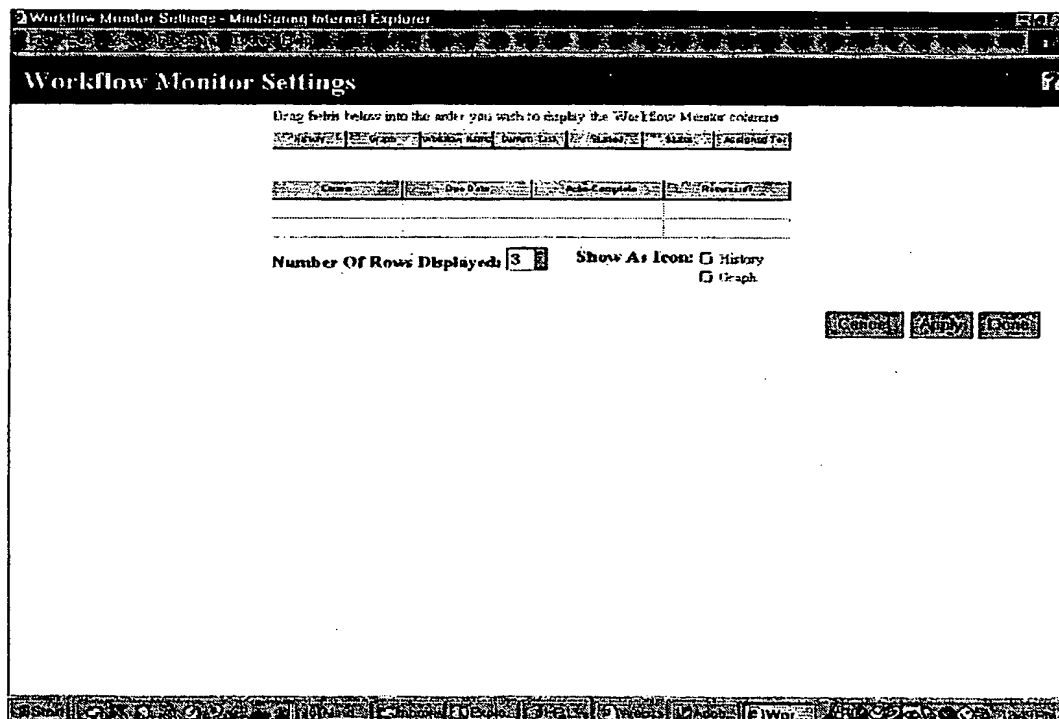Figure 61

Figure 62

Figure 63

Figure 64

Figure 65

Figure 66

Figure 67

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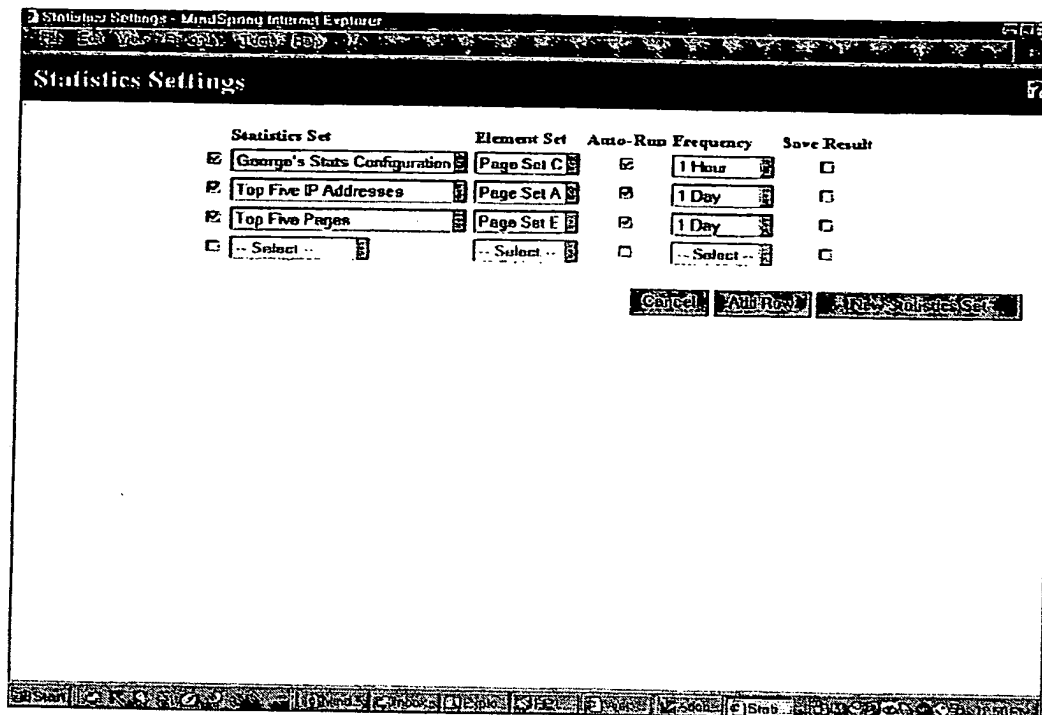
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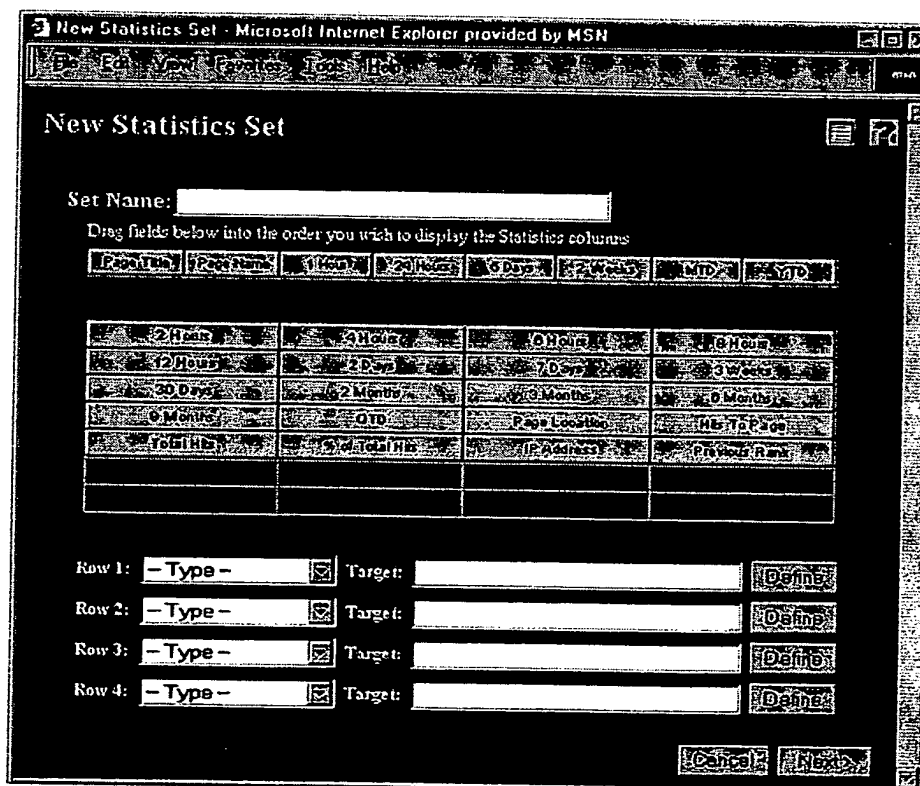
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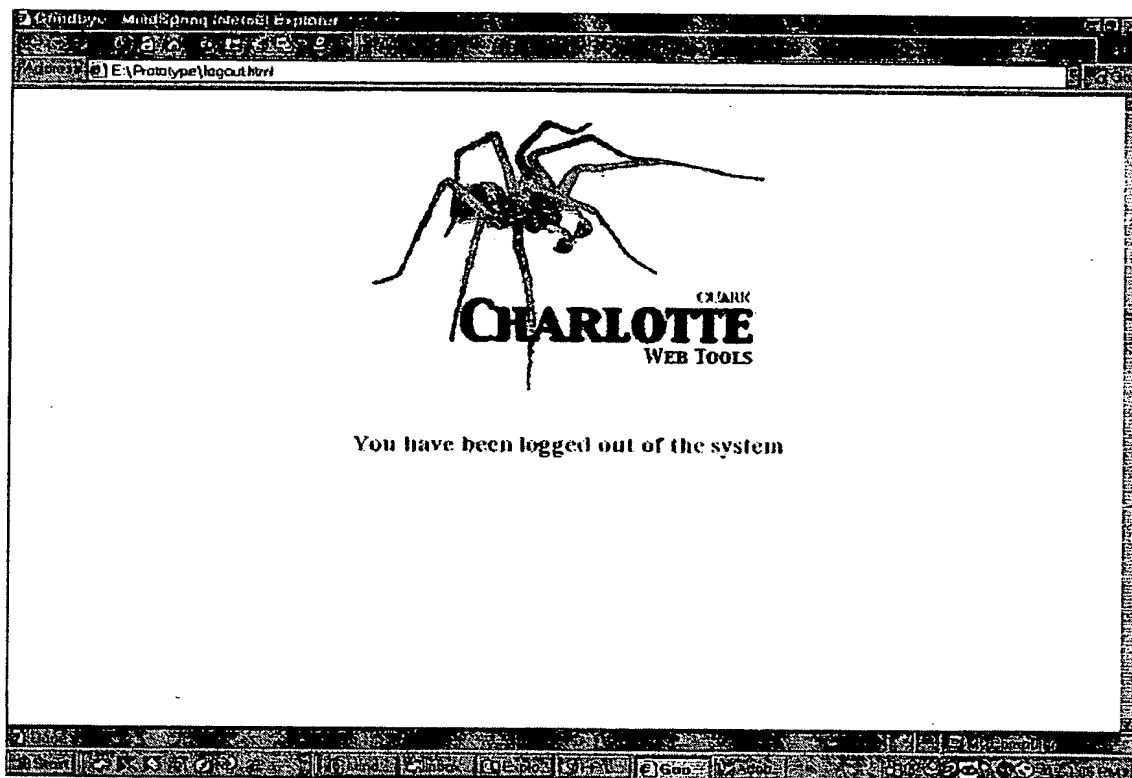
Figure 71

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/30

US CL : 707/10, 104, 501

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 707/10, 104, 501, 9, 506, 513; 709/217, 219

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,894,554 A (LOWERY et al) 13 April 1999 (13.04.1999), ALL.	1
X, P	US 6,026,433 A (D'ARLACH et al) 15 February 2000 (15.02.2000), ALL.	1

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
04 April 2001 (04.04.2001)	27 APR 2001

Name and mailing address of the ISA/US	Authorized officer
Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Thomas Black _James R. Matthews_ Telephone No. 305-9000

Form PCT/ISA/210 (second sheet) (July 1998)